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BETTER FRUIT

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NUMBER 6



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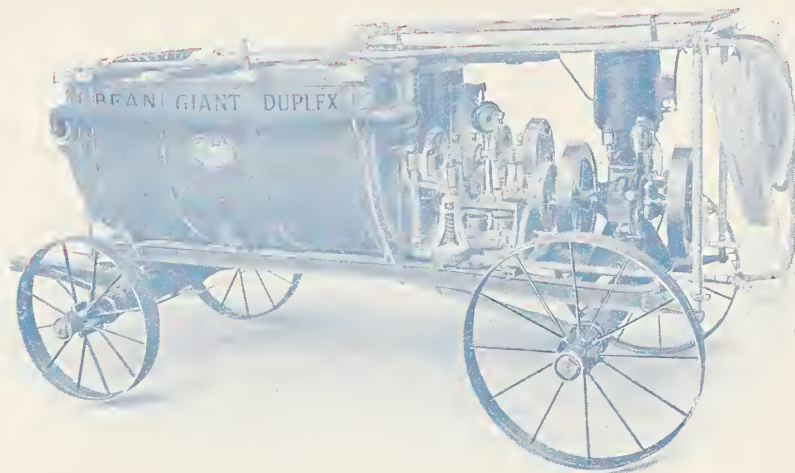
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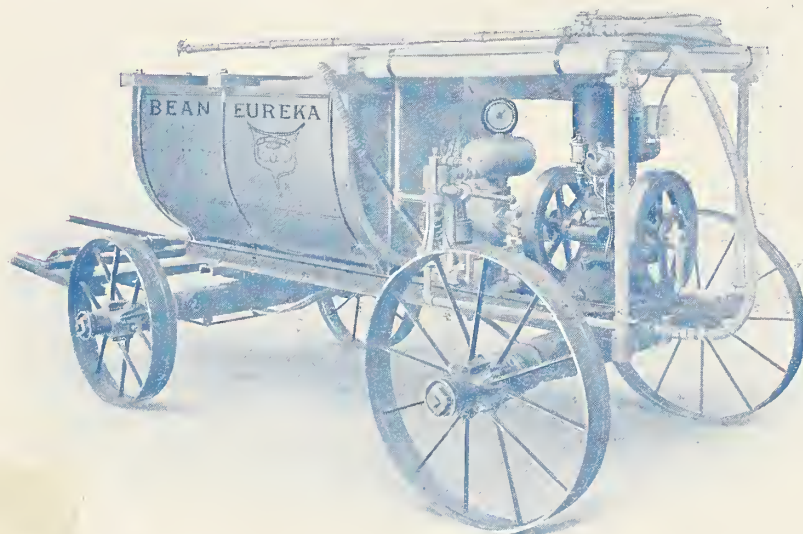
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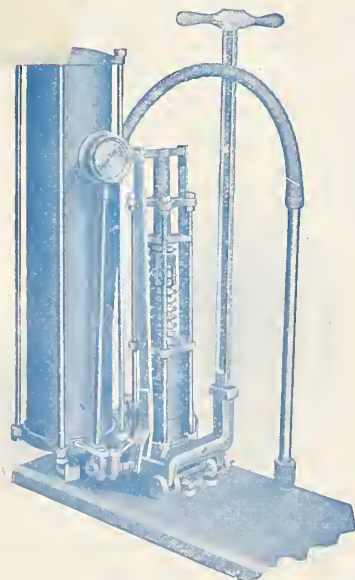
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BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

Application of the Principles of Pruning to Young Trees

By Professor C. I. Lewis, Oregon Agricultural College, Corvallis, Oregon

(Continued from last issue.)

At the time the tree is given its first pruning we should definitely settle the question of height of head. Most growers, after they have headed the tree, pay no more attention to it until the following spring, when they are ready for the second pruning. We believe, however, in many cases this is a mistake. It will be found very advisable in May and June to go through the orchard and look over the young trees carefully. At this time certain very small shoots or buds should be rubbed off. If one branch is growing at the expense of all the others, it can be suppressed, and one can do very much the first year to start the tree in the proper way and to put it in better condition for the second year's growth. It is only in rare cases that it will be advisable to give the trees a systematic summer pruning the first year, because it will be only occasionally that the trees will make a sufficiently rank growth to warrant such pruning. Many young trees do not make much top the first year; they are building roots and getting firmly established. In cases, however, where they have made a strong growth, it is suggested that the trees be summer pruned, and just as soon as they have made sufficient growth so that new laterals can be formed to advantage, you should pinch back these shoots, provided this pruning can be done not later than the middle of July, and preferably in June. These laterals should be cut back to stubs from 8 to 15 inches in length, depending, of course, upon the vigor of the branch. One can make the mistake, however, of pinching them back so hard as to force the new laterals too near the main crotch, and thus make a very close, heavy crotch which will pile up in years to come.

Since few trees can be summer pruned the first season, we shall consider the tree the second spring, as one which had received no such pruning. One should choose definitely the type of tree to be grown, either the open, the leader or the modified leader tree. If the tree was summer pruned, that question should have been settled at the time of pruning. If you grow the leader or modified leader you will choose one branch to maintain the lead, and will prune this in such a way that it can maintain such a lead. If you decide to grow the open tree, you should choose the four or five branches and space them as far apart as possible and cut these back according to their

strength, cutting the strongest branches the most and the weakest ones the least. One will then have five main branches with a few laterals on each one. It is customary to remove all these laterals. By the middle of June the young tree should have made a sufficient growth to allow for summer pruning. Each branch should be pinched back so as to leave it from 8 to 15 inches long, cutting according to vigor, always suppressing the stronger.

By the following spring each of the original five main scaffold limbs will

have from one to a dozen lateral or additional branches. It is customary to remove all but one from each main branch so that when the tree is pruned there will be ten branches on the tree where there were five before. A great deal of care should be used in selecting these new branches. The two branches on each scaffold limb should be spaced as far apart as possible. Of course, avoid the choosing of laterals which will tend to grow in toward the center of the tree. Then in cutting these two laterals avoid cutting them equally.

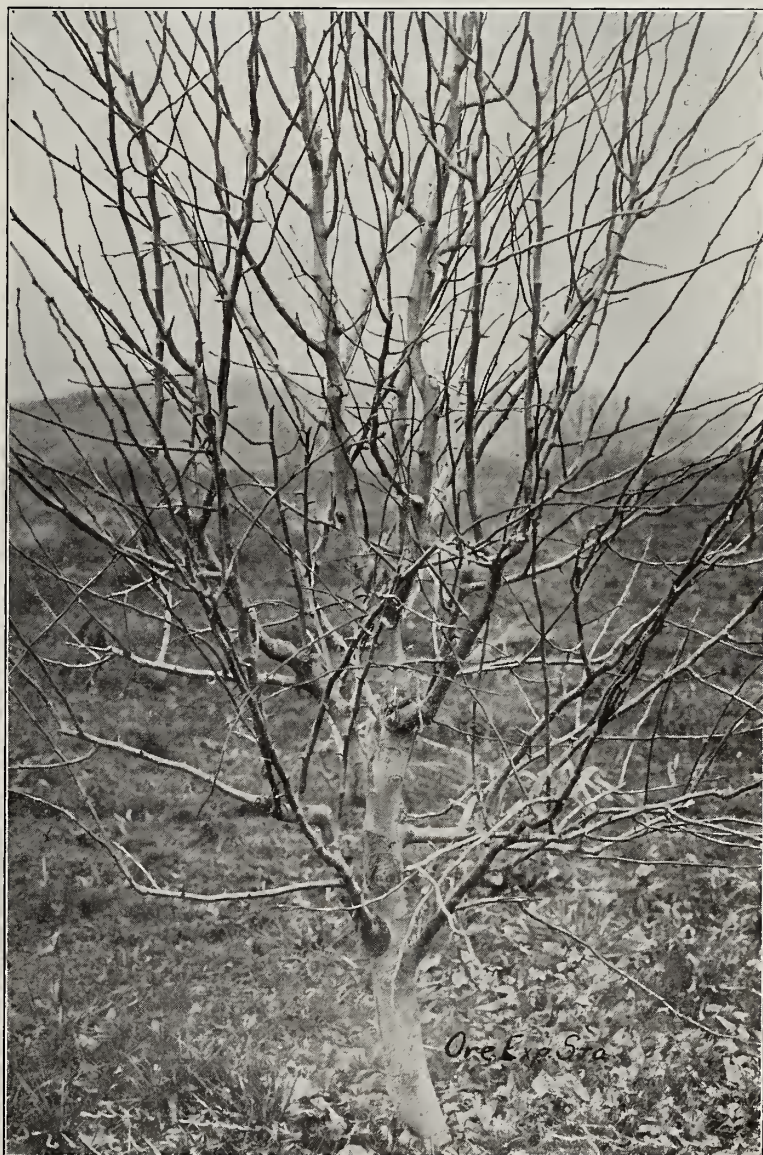


FIGURE 32—Five-year-old Winter Nelis pear tree begun as an open center, but typical of the leader type. The lower branches are not keeping pace with the upper and are becoming weak in comparison. To save or restore balance the upper branches must be suppressed.



FIGURE 33—At left: Typical five-year-old Winter Nelis. At right: Same tree after pruning. Note that the center is being suppressed. This tree gives indication of bearing a crop, and if it should will stand heavier cutting back next season.

Choose one which will grow as a leader for the branch and do not cut this back as heavily as you do the second branch, which you will suppress more heavily in order to make it grow as a side branch and not as a main branch. In this way you will get rid of the weak crotch, which is one of the fundamental principles to remember in pruning trees. This second summer these trees should be so well established that by June you can give them a second pruning. Each one of these branches that you left on the tree has grown 15 or 18, or in some cases as much as 30 inches or even more in length. We would advise, instead of letting them go the entire summer, that whenever they have made sufficient growth they be cut back in order to force out a new set of laterals. The following spring in all probability about all the pruning you will have to do will be a little thinning out here and there, and in case the laterals which come out as a result of the pruning in June have made a very vigorous growth and are getting too rangy, you will have to cut them back somewhat, although it will only be in extreme cases that you will have to practice much cutting on these branches. Moderate clipping back is often advisable to prevent the terminal bud from continuing growth and producing long willowy growth. So you continue this pruning right along for two or three years, never leaving as a rule more than about two branches where you had one before.

At the beginning of the fourth year I would suggest a modification of the pruning. It is coming time now to let down on the heavy pruning. If you practice as severe pruning as you did

the first four years, you are constantly going to force the tree into wood. Many growers thin out the laterals excessively, force an enormous terminal

growth and cut back this terminal growth vigorously, thus forcing out new laterals. We believe that too many growers make a mistake by pruning too vigorously at this time. It would be to advantage to leave more lateral wood than most growers leave. Just how much is advisable to leave in all cases is very hard to say, because we have not worked out definitely just what is the relation of shade to the formation of fruit spurs or fruit buds. Until that can definitely be worked out it won't be possible to give very explicit directions, but we would rather let the tree grow a little brushy, because after it comes into bearing this excess wood can very easily be thinned out. The summer pruning now changes from the former early summer pruning and should now be done at the time the terminal buds form, rather than early in June as already described under summer pruning. The rule, then, with trees from four to seven years of age, is simply to cut back the terminals sufficiently so they will not run away with the tree, and just thin out so that the tree does not become too dense. More pruning than this we would not recommend. We feel that if this is followed there will be a tendency for young trees to come into bearing earlier than they otherwise would.

The amount of pruning that trees which have just come into bearing will stand will, of course, vary tremendously according to their vigor. The



FIGURE 34—At left: Five-year-old Winter Nelis showing one branch growing at the expense of the rest of the tree. At right: Same tree pruned. Note that the strongest branches have been cut the hardest.

soil they are on, the climate and the variety should all be taken into consideration. As shown in the chapter on "The Study of Fruit-Buds," there is a great difference in the bearing habits of trees. The amount of pruning which regular bearers like Jonathan, Wagener, Winesap, Grimes, etc., will stand will vary considerably as compared to the pruning that Yellow Newtown, Northern Spy, Baldwin, Tompkins King or varieties which have their habit of growth will stand. As a general rule, the growers of Yellow Newtown on the heavier soils of the state are making a mistake with their young trees. In almost all cases they are over-pruning, and are cutting their trees so hard that whatever tendency the trees might naturally have to bear are directed into other channels.

The directions given so far have been written chiefly from the point of view of apple pruning. Nevertheless the recommendations apply equally well to all of our deciduous fruits and nuts, such as prunes, pears, cherries and walnuts. There are a few special recommendations, however, that we wish to give for fruits other than apples.

Special Recommendations for Pears

We never recommend pruning the pear to the leader type. Growers generally feel that it is harder to fight the blight with the leader than with the open type of tree, so we generally recommend that either the open type or the modified leader be chosen. We would caution growers, however, that many of the open trees are very easily

damaged from blight and are often ruined because the crotches are poorly formed. An effort should be made to have the branches spaced as far apart as possible, so that if a branch is lost from blight the remainder of the tree can easily be saved. It should always be borne in mind that fire blight works in succulent growth, and that in handling pear trees one should avoid excessive wood growth. Pears begin their growth earlier in the spring and cease it earlier in the summer than is the case with apples. This should be specially borne in mind with young trees if summer pruning is to be practiced. Some varieties of pears, especially the Bartlett, have a tendency to form fruit buds and to bear fruit on the ends of the terminals. They will do this quite often while the trees are still very young, and they should be discouraged from bearing in this way. The tendency to bear on such terminals should be overcome by summer pruning. The crooked growth of the Winter Nelis and Bosc is very troublesome to the beginner in pear growing. Our advice would be not to worry too much about the crooked growth, for as the trees become older they will take care of themselves very largely, and this crooked growth will cease to be troublesome. Prune the trees in practically the same way as those that grow straight.

Pears can carry more lateral wood than apples. They relatively spread farther when they produce a heavy crop, so that one should avoid thinning the young trees excessively. Keep



FIGURE 36—Typical cherry tree of extremely poor type, all of the main branches issuing at one point. Note how leggy the tree is, due to the fact that there was insufficient heading-in in the first two years. Heading this tree back twice a year might have been helpful.

all spurs or fruits from the main trunks and low down on the scaffold branches, as these are a source of infection from the blight. It is also wise in pruning in any district where fire blight is troublesome to see that the pruning tools are carefully sterilized before the cuts are made.

Special Recommendations for Cherries

Formerly the cherry was headed about 35 inches. There are many growers in the state now that practice heading from 20 to 25 inches, who are building very nice trees. There seems to be a prejudice against pruning a cherry tree. Our advice would be to prune it the first six years just about the same as has been directed for apples. We would urge, however, the summer pruning, as we have felt that splendid results could be obtained with cherries by summer pruning. The cherry has a tendency to shoot up in the air very rapidly, making an enormous growth the first two years. The result is that the average grower has not the nerve in the winter to cut this back severely, and he leaves his trees too leggy. One way to overcome this leggy, high type of growth is to cut back the terminals in the summer. A very good type of tree to get would be the Mazzard body, making the trunk and main scaffold branches of the Mazzard, later budding these over. This will give a stronger crotch and there will be less gumming and loss from trees of this type. Should your cherry trees need heavy cutting, do not hesi-



FIGURE 35—At left: Five-year-old Bartlett pear tree before pruning. At right: Same tree after pruning. This is a splendid type of modified leader.



FIGURE 37—Three-year-old English walnut tree properly staked. The pruning of these trees should consist, first, of the removal of two lower laterals, and second, the cutting back strongly of last year's growth. This tree was headed at thirty inches. It would have been better to head five inches higher. The alternate trees are three-year-old cherries, which were summer pruned the previous season. Note how much stronger and better spread the trees are than the cherry tree shown in Figure 36.

tate to take out large branches. However, you should take care to protect the wounds carefully, as cherry wood is softer than that of most of the pomaceous fruits.

Special Recommendations for Prunes

There is very little additional that can be said which will be helpful in the handling of young prune trees. The recommendations for the apple trees apply very closely. The trees are generally headed higher than any of our other fruits, 30 to 35 inches. Some growers, however, are heading about 20 to 25 inches, and we have seen some very pretty trees headed at this height. The tree never becomes extremely high headed, and since most of the fruit, which is to be evaporated, is allowed to drop on the ground before harvesting, the height of head from the harvesting point of view does not need any consideration. However, we believe that the growers will get better results by constantly suppressing terminal growth and thinning out the centers where they become too dense, so as to allow development of strong wood. Do not overdo this, however, by removing all small laterals, spurs and secondary branches. We would urge, also, that not too much wood be taken from the outside of the tree, and that it be kept fairly open. Many growers of young trees practice cutting off considerable wood on the outside of the tree and leave the centers a little dense. We would recommend just the reverse of this policy. Try to keep the trees low headed, broad and spreading, so as to build a large framework for fruiting wood in succeeding years.

Special Recommendations for English Walnuts

We would recommend that the trees be headed at about 35 inches, and at the time they are headed that a good heavy stake, 7 or 8 feet in length, be driven

down close to the body of the tree. The first summer choose the four or five laterals that will give a good scaffold framework and tie these to the stake. If you do not do this they will tend to droop to the ground too much, but by careful tying you can keep them well in shape. The following spring cut back the trees exactly as though they were apples. We find in many walnut trees that one branch may grow up six or eight feet. It may grow three or four feet higher than any of the other branches. Cut this one back hard so as to bring on the other branches. We generally recommend the pruning to be done just before the starting of the sap flow. Formerly the trees were allowed

to grow three or four years and all laterals were taken off and the trees grown to poles. We find that when they are handled as though they were apples we get a more spreading tree, one with larger fruiting area and one which will be much more easy to handle from the orchard management point of view.

Special Recommendations for Peaches

The peach has an entirely different fruiting habit from any of the other trees we have mentioned. The fruit is all borne on the one-year-old wood. However, the aim in pruning such trees the first few years is very much the same as that for other types of fruit, namely, the building up of a good, strong framework for future years of fruiting. The peach when it is secured from the nursery is generally too large and has a large number of branches. An ideal tree would be a straight whip, but it is almost impossible to buy such trees, and under our soil and climate conditions they tend to grow very vigorously in the nursery. We would recommend a general heading to about 18 to 20 inches. If whips can be secured they should be pruned as is customary with other trees. If there are a few weak laterals we would recommend their removal, but if the trees have strong laterals, instead of removing all the lateral growth, which is practiced by some growers, we would advise choosing half a dozen well-spaced branches and cutting them back to one or two buds. This will give a larger leaf surface the first year, will remove the danger of having a tree stand with only one or two branches, and also will remove much of the danger of the trees dying. We have found that under our climatic conditions a great many peach trees, when they are pruned back to whips after they have once formed strong laterals, never start to grow at



FIGURE 38—This illustrates two methods of pruning the English walnut tree. The trees pruned to "fishpoles" at AA are exactly the same age as tree B. The only difference being that on trees AA all lateral growth has been kept off for several years, the trees being given summer as well as winter pruning to remove laterals, while with tree B all laterals have been allowed to remain.

all. Some trees will force out new buds and shoots, but on the other hand there are others which will not. If after the buds start on the short laterals there are found to be too many, it will be a simple matter to thin out undesirable growth. It is customary to try to head the peaches as low as possible; to have the first branch come out very close to the ground and to get the crotches as well spaced as is consistent with the amount of area one can work with. At the end of the first year choose four or five of the best-spaced branches and cut them back on an average of 8 to 12 inches in length. Not much summer pruning is practiced for peaches. By the end of the second year the tree should be cut back again so that it will vary in height from about 3½ to 4½ feet. Constantly train the tree to spread by cutting to outside buds, constantly forcing the tree to make a broad-spreading top rather than to allow it to shoot up in the air. It takes more nerve than the average grower has to cut the trees as hard as indicated, but it is necessary if one is to keep the tree near the ground and have a profitable fruiting tree. It will be necessary to cut off about two-thirds of the last year's wood from the inside of the tree. Practice this constantly with the peach. The aim will be to keep the center completely open so as to give light and develop strong wood. Cut out all weak wood and limit the amount of annual wood so that what is left can grow strong. It will be only on the strong wood that large peaches will grow. We would caution the growers, however, that they can go to extremes in growing



FIGURE 40—Same tree as shown in Figure 39, after pruning, showing desirable heavy pruning.

vigorous wood. If the wood becomes too vigorous, the first few crops will be borne entirely on the ends of the shoots, and it will be almost impossible to prune the trees and still have any fruit. The medium-sized wood will be

more desirable. If you find the wood is getting too vigorous be sparing in the pruning and it will tend to check the trees. A little summer pruning might be used to advantage where the wood tends to become excessive. Not much fruit should be taken off peaches until about the fourth year.

California, according to the California Fruit Distributors, shipped the following tonnage in the year 1915. The figures also show the tonnage for 1914, showing the shipments this year were somewhat less than last year. The figures given are in carloads:

	1914	1915
Cherries	166¼	205¼
Apricots	382	392¼
Peaches	2,144	1,688¾
Plums	1,906½	2,224½
Pears	2,685½	2,608
Grapes	7,116¾	7,201½
Miscellaneous	43¼	42¾
	14,444¼	14,363

The National Conference on Marketing and Farm Credits will hold a meeting in Chicago at the Hotel Sherman November 29 to December 2, inclusive. The first meeting was held two years ago. An immense amount of good has been accomplished through this conference. Every fruit grower, every farmer and every one engaged in marketing farm products should not fail to attend this conference if it is possible to do so.

The first returns from Watsonville Newtowns exported are not very flattering in net results to the grower.



FIGURE 39—Young peach tree just coming into heavy bearing.



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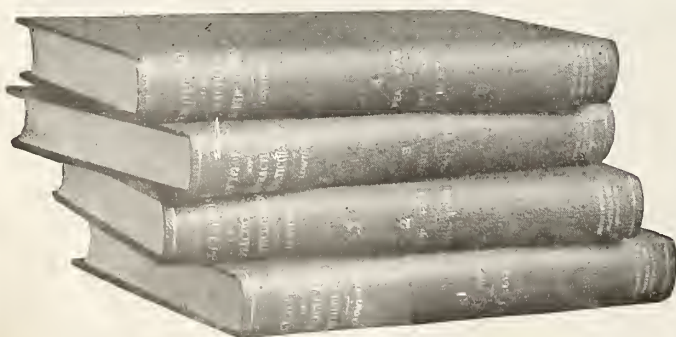
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Training—Some people are successful with no trellis, but for convenience and to insure against damage by high winds, this support is preferable. Posts about 5 ft. long, cross-arms 15 to 20 inches. Grape wire stapled at each end of this cross-arm and running both sides of the row. No tying is necessary. This gives a chance to cultivate thoroughly and often.


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Economies in Apple Harvesting

E. H. Shepard, Editor and Publisher of "Better Fruit" and Fruit Grower, before the Washington State Horticultural Society and the Oregon State Horticultural Society.

A FEW years ago apples commanded such a high price, with a ready sale, that economy in the orchard industry was very little thought of. As a matter of fact, the fruitgrower could make money no matter how great his expense. "Necessity is the mother of invention." Therefore in these last few years when low prices have prevailed, with no immediate prospect of higher prices, fruitgrowers have realized that in order to make money it would be necessary to reduce the cost of production both in growing and harvesting. Originally it was my intention to include in this address something on economy in growing and cultural methods, but inasmuch as Professor C. I. Lewis, horticulturist at the Oregon Agricultural College Experiment Station, has just recently issued a bulletin on "Economics of Apple Orchard" in which cultural methods are discussed so thoroughly I hardly think it necessary to take up that phase of the business, as time is limited. But I do want to say that Professor Lewis has contributed to the orchard industry in his bulletin, the most valuable, complete and thorough,—in fact, the only thorough treatise on the subject of orchard economics that it has ever been my pleasure to read. As your program is unusually long I shall endeavor to be brief and therefore proceed without further discussion upon the subject assigned to me—"Economics in Harvesting the Apple Crop."

Thirteen years ago I became a fruit-grower in Hood River Valley. When I produced 1200 boxes the harvesting season lasted from the middle of Octo-

ber until Christmas time. This year I harvested over nine carloads in thirty-four days. A few years ago the cost of harvesting a box of apples approximated 50 cents per box in most cases. Wiping and grading cost anywhere from 10 to 20 cents per box, and every other expense connected with harvesting was proportionately high, but gradually the expense has been reduced. A few years ago I published an itemized cost on the harvesting expense which set the ball rolling, and since then we have been furnished with many figures on the cost of harvesting, each year showing a reduction in this cost. Four or five years ago I asked one of our prominent growers what it cost him to pick, how much it cost him to grade, to pack, etc., and was surprised at his reply: "I do not keep costs on these different items; I cannot answer your questions, but I know it costs over 75 cents to grow and market a box of apples."

It is a well-known fact that many large manufacturing concerns have been restricted in the price they can sell at by competition. With no prospect for increasing the sale price, their only opportunity of making money on the investment was through efficiency and economy in production. The fruitgrower today is facing the same problem—economy and efficiency in the growing and harvesting costs. No man in a manufacturing business or any producing business,—be it either growing apples or producing anything else,—is in a position to reduce the cost of production unless he knows the cost of every item of production; he can-

not reduce the costs if the costs are classed under one general head of costs. Therefore, several years ago, with the aim in mind of reducing the cost of production, and more particularly the harvesting cost which I am discussing today, I divided the harvesting costs into twelve separate items which, in my opinion, is a sufficient itemization of the costs to enable the grower to ascertain where the expense can be reduced. This classification of harvesting costs is as follows: Packing, picking, grading, making boxes, orchard hauling, hauling to the depot, help in the packing house, hauling empty boxes to the packing house, nailing up, boxes, paper and superintending.

First, I desire to make one general statement and then I will proceed to explain in detail. Last year I saved 4 $\frac{1}{2}$ cents per box over the previous year, and this year I saved 4 cents per box over last year. Two years ago I thought I had nearly approached the minimum; last year I felt quite sure I had, but by careful work, as already stated, I succeeded in reducing the cost of harvesting 4 cents this year, compared with last year. My saving this year is more largely through efficiency than in lower costs. This will be evident to you when I tell you that I marketed two carloads more this year

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other without lifting
the plow.**

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than last year, in three days less time, with one man less in the harvesting crew. With my present facilities, which are limited, I have no hesitancy in making the statement that I could harvest at least double the quantity or more, in the same length of time as I harvested the crop this year, at a less cost. My packing cost was 4 cents per box. A few years ago we paid 7 cents per box for packing. A packer is entitled to as fair wages as any other first-class worker. What he earns depends upon the number of boxes he is able to pack. This quantity can be decreased or increased by the facilities afforded him. Therefore, it is economy to provide the packers with convenient room, good light and all necessary facilities for efficient and speedy work.

On account of low prices last year, not feeling able to spare the money to

build a packing house, I went down to Portland and had the Portland Tent and Awning Company make me a tent 30x40, the top made of 12-ounce duck and the sides of 8 ounce. The top and sides were sewed together in one piece, and the ends were made separately of 8-ounce duck. The sides and ends were 8 ounce instead of 12 ounce, reducing the cost of the tent. Instead of having the tent made as tents are usually made, with the ends, sides and tops all in one piece, I had the top and sides made in one piece, the top and sides being nothing more or less than one big sheet, and the ends separate, which makes the tent very easy to put up. I would also call your attention to the fact that by having the tent made this way, it can be hung up after the packing season is over in such a way as to prevent the tent becoming rotten

when it is stored away if damp or wet. I built a framework which I will leave standing, and put in a floor of one-inch boards because they were cheaper and took the floor up at the end of the season to prevent it becoming warped if it remained out all winter. The cost of this tent was \$80, the lumber \$25, work of putting up the frame and tent \$20, making the total cost of \$125. And I want to say that I believe I had the best packing house in Hood River, for the reason that a tent gives you a much better light than you can possibly secure in any packing house where you depend for your light through windows, no matter how many windows you put in. In addition to this, I want to call your particular attention to the fact that a tent which affords ample facilities for packing 10,000 boxes, or more for that matter, only costs \$125. You could not erect a decent looking building which you would want to leave permanently on the place, of the same size, for less than \$1500 or more.

I used a grading machine which made two grades, sorting into nine sizes, setting back the C grades and cooking apples and running these through the machine at the next run, which reduced the amount of rehandling to almost a minimum, because the percentage of C grades and cookers in any well-regulated orchard should not exceed approximately about 15 per cent of the crop. Benches were arranged alongside of the packers, affording a place for the packer to set off his box without loss of time. Packing paper was placed on these benches in close proximity to the packers, and also the layer paper, the lining paper being hung on the posts supporting the ridge pole, so there was no loss of time on the part of the packer in securing either his box, wrapping paper, lining paper or layer paper, or in setting off the box. With such facilities, and even mine could be improved upon, a good packer can pack from 100 to 125 boxes per day. 100 boxes a day at 3½ cents per box would make \$3.50 per day of ten hours, which is pretty good wages during these hard times. I think any packer would be willing to work where facilities were such that he could pack out 100 boxes a day and at 3½ cents per box, which would enable him to make \$3.50 per day or more, according to the number of boxes packed. Therefore, I believe the cost of packing in the near future can be reduced one-half cent or more.

Picking is one item in connection with harvesting a crop of apples which is the most difficult to do efficiently and at the same time economically. I find picking costs vary all the way from 3 to 8 cents per box. Last year my picking cost was 8 cents per box. This year it was .0546 per box. It is difficult to make a comparison of one orchard with another on the cost of picking, because the cost of picking will vary greatly on account of the age of the trees, the size of the crop on the trees and the size of the apples. There is one thing I do not believe in, and that

is too much speed in picking. Too much speed means too many apples that are bruised and consequently a heavy loss. Too much speed also means too many spurs pulled off and too many stems pulled out. When a stem is pulled out, if the skin is broken, the apple is unfit for any of the marketing grades except the cooking grade. If the spurs are pulled off your crop is not only shortened for next year, but for many years afterward, as apple spurs continue producing for many years. Therefore, I never hurry my pickers, but aim to find out by watching some average picker closely, how many loose boxes he can pick a day and then trying to maintain this average on the part of the other pickers. In order that you may understand my cost of picking being higher than I think it should be, I want to explain to you that four acres of my orchard were old trees with a medium crop, therefore requiring much ladder work, necessarily making the expense greater in picking. In addition to this, 32 acres were in young orchard which are just beginning to bear, which also increased the picking cost per box. The size of the apples all the way through was good, as I had 76% 4 tier, 17% 4½ tier and only 7% 5 tier. Practically all of the 5-tier crop came from old Newtown trees, which was my own fault, because, although I thinned them to one in a cluster, I did not thin them sufficiently, as the crop on these Newtown trees in the old orchard was unusually heavy.

The total number of days in picking was 156 for all the men engaged, making an average per picker of 50 loose boxes per man per day, which in my case was equivalent to 35 packed boxes. My pickers were paid \$1.75 per day, with the exception of my regular men who helped out in this work part of the time, and who received more. The cost of picking can be reduced in several ways under the same conditions. The kind of ladder used is a big factor in the cost of picking. The ladder should be light, of convenient shape, so that it can be quickly and easily handled.

It cost me one cent per box to make my boxes, including the nails. Some saving can be made on box making by either training one of your own men especially in this line of work or securing the services of an expert box maker who can make them at three-quarters of a cent per box and make good wages.

My grading cost me .0321. This, however, included the wiping of the entire crop, which was necessary because I had applied bordeaux spray on the 20th of June and again on the first of August. It is my opinion that grading, even including a normal wiping, can be done at a sum which will not exceed to any great extent 2½ cents.

Hauling empty boxes to and the filled boxes from the orchard to the packing house cost me .0087. A saving could be accomplished in this line by using a

Continued on page 25

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\$100,000. The plan is worthy of serious thought. If by the expenditure of one cent per box new markets can be created or consumption in any of the large markets increased to a sufficient extent so as to consume 2,000 or 3,000 carloads, there is no question that the pressure in many other marketing and distributing centers would be relieved and consequently better prices obtainable. If this can be accomplished it does not seem that any one district will be justified in declining to contribute even though they do not succeed in selling one box of their own apples as a direct result of the campaign, because if the market was relieved in other sections where they are operating, their extra profit would easily be more than enough to justify the expenditure. Before such a campaign can be endorsed by the growers and their consent given to such a contribution, it seems reasonable to assume that some definite plan for this expenditure must be presented, although it will not be necessary to go into the entire details of the plan. The contributors also must be convinced that the money will be wisely spent; that the campaign shall be conducted with reasonable expense in putting it into operation. It is a well-known fact that many fruitgrowers did not make the cost of production last year, and therefore they will not look with favor upon any plan that will create positions which will enable a few to draw down some big salaries. Those best informed have no anxiety or fear in this respect, inasmuch as this campaign and the fund is to be placed in the hands of three of the ablest men who can be selected, one by the Chamber of Commerce of the City of Spokane, one to be selected by the Chamber of Commerce in Seattle and one by the Commercial Club in Portland, and the clearing houses in these respective cities. It seems reasonable to assume that the growers need have no fear of such a committee either wasting the money or creating an institution that will make a lot of positions at high salaries. Therefore it is to be hoped that a plan will be devised and presented that on the face of it will look sufficiently well to justify the growers in contributing their one cent per box, because the apple industry of the Northwest certainly must avail itself of every opportunity to extend its markets, create a wider distribution and an increased consumption. Every district and every selling concern in the Northwest must expect to stand on its own bottom and create a business for its own particular varieties or its own individual brands. However, it may be true that all the districts and selling concerns can co-operate together for a general increased consumption and extension of markets and a better distribution.


The Growers' Council and Its Accomplishment.—As a result of a conference in Spokane in 1914 and the work of the By-Products Committee, it was decided to hold a marketing conference

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National Publicity for the Northwestern Box Apples.—As a result of the conference held between the Executive Committee of the Fruit Growers' Council and the Shippers' League, a plan was suggested at an informal conference of those connected with the fruit industry at the Eighth National Apple Show at Spokane, advising the appropriation of one cent per box to be spent in an advertising publicity campaign for the purpose of market extension, greater distribution and increased consumption. The subject was presented purely in a tentative form at a conference in Spokane without any definite plan, in order that the fruitgrowers, the selling concerns and others connected with the fruit industry might have an opportunity to give the matter serious thought and be prepared to discuss any plan that may be presented at a meeting of the Fruit Growers' Council and selling concerns to be called in January, 1916. While there were many strong advocates at Spokane there was some opposition, one district in particular feeling that each section and each selling concern can best spend its own money in its own way in creating the demand and a market for its own particular brands. It is not the intention in this article to take any particular stand in either recommending the appropriation or opposing it. However, it seems desirable that the matter should be presented and given to the fruitgrowers and allied interests in as public a way as possible, in order that they may give the matter due consideration and be in a position to decide and decide wisely at the meeting to be held in January. Such a fund, in accordance with the crop, the number of districts and growers contributing, will amount to anywhere from \$50,000 to

in Seattle. Consequently a call was issued for the different districts to send delegates to a meeting which was held in Seattle early in January, 1915, for the purpose of discussing marketing problems. A second meeting was held at Tacoma in February, 1915, which resulted in the organization of what has been known as the Fruit Growers' Council with a Board of Control of ten and an Executive Committee of three. Many claim that the Growers' Council has obtained no definite results. Many growers expected the Growers' Council would be able to fix and dictate prices—an unjustified expectation. The Executive Committee has accomplished a great deal more than they have received credit for. It is a well-known fact that during the season of 1914 there was no harmony prevailing between shipping associations. Much feeling of bitterness existed, and competition was very keen both in the campaign for tonnage and in the selling campaign. Just how and in what manner it is difficult to say, but nevertheless it is generally conceded by many who were well informed that the Executive Committee has been a prominent factor in creating a more harmonious condition and a better relationship with all of the interests identified with the fruit industry. As a result, harmony has prevailed and reasonably good prices are being obtained. One noticeable factor in connection with the marketing organization this year has been the lack of unwarranted personalities which were indulged in freely in previous years. The different officials connected with the selling concerns apparently are on a friendly and harmonious basis. In fact, this is indicated by the fact that the marketing concerns have formed a committee known as the

Shippers' League, which has met with the Executive Committee of the Growers' Council in the most friendly sort of an attitude. As a result competition and campaign for tonnage have been free from personalities and the sales more or less free from the harmful competition that existed last year. Each one of the marketing concerns has recognized the right of the others to exist and continue.

The Wenatchee Fruit Growers' League.—One of the marvelous creations during the present readjustment of the apple business was the splendid organization known as the Wenatchee Fruit Growers' League. Through the co-operation of the state, this league succeeded in making effective in the Wenatchee district (a very large area) a plan for state inspection of all apples, which has resulted in every grower, no matter how he shipped, whether independent or through any of the selling organizations, being compelled to submit to a state inspection. After this inspection was made the official stamp was placed on the shipment. When a carload was shipped, an official certificate of inspection was issued by the official inspectors. The force of inspectors consisted of 51 men working under the supervision of O. T. Clawson as chief inspector, in connection with Mr. Adams, president of the Wenatchee Fruit Growers' League. The result of this being that every grower in Wenatchee has put out a consistently uniform grade, establishing a standard valuation on every car of apples, according to the variety, grade and market conditions. It is therefore our pleasure to commend Wenatchee for the excellent work it has done along this line and to suggest this plan to other districts for their consideration. The Wenatchee Fruit Growers' League are showing a spirit of co-operation with other districts along lines whereby all districts can work together with harmony to the betterment of the industry throughout the Northwest, the president, Mr. Adams, having offered to visit any of the principal fruit-growing sections to explain this plan—its operations, how it is carried out—provided any district is willing to pay the expenses of such a trip. Mr. Adams voluntarily offering to contribute his own services and knowledge without reimbursement.

Economy.—The Oregon Legislature, owing to financial conditions, felt compelled to adopt a rigid system of economy in all departments. It is sincerely regretted that it seemed necessary to extend this to the Oregon Agricultural College on account of the excellent work it has been doing and is doing. However, the new law provides for an experimental fund to be contributed by each Legislature, effective for two years, at the end of which time a new appropriation must be made. It seems regrettable that such a law seemed necessary, for the reason that the Experiment Station men say that many problems require many years' investigation

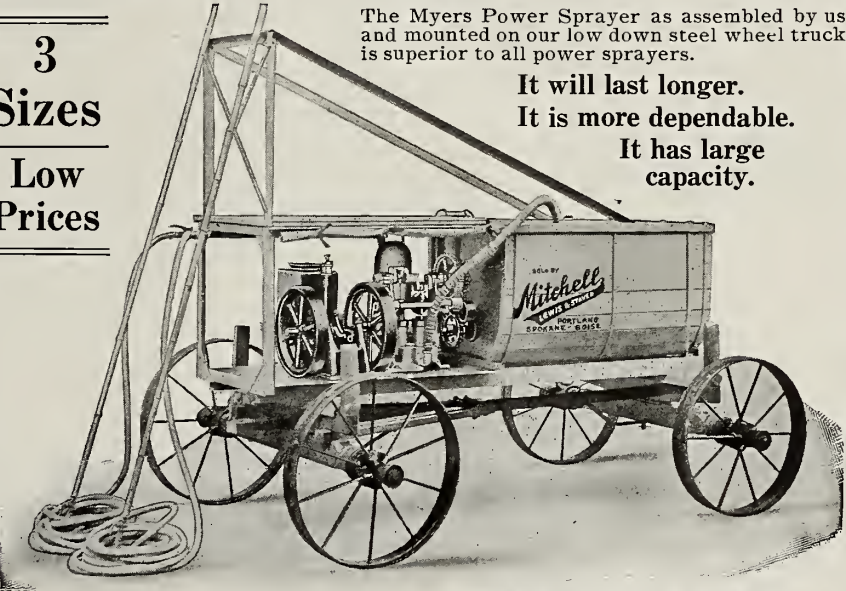
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before they can be expected to be solved. Consequently at the present the Experiment Station of the State of Oregon is somewhat hampered by the limitation, being unable to engage in experimental work which cannot be expected to be reasonably worked out during the life of the fund, which is limited to two years.

Selling Organizations.—In America where every man is free to engage in any line of business he sees fit, with comparatively few restrictions, it seems only fair and just to concede that every selling organization in the Northwest has the right to exist and continue, provided it can make satisfactory returns to the growers that will compare favorably with other marketing concerns doing business in the same territory. The opinion generally prevails that at the present time the Northwest is amply supplied with selling organizations. There is apparently no desire evident on the part of any organization to put any other organization out of business. On the other hand, it seems to be more or less the universal opinion, not only among the selling organizations themselves but among the fruitgrowers, that at the present time the number of selling concerns and associations are sufficiently ample to handle the business of the Northwest without increasing the present number. Therefore it is to be hoped that effort will be directed toward increasing the strength of the present organization, whichever ones

the fruitgrowers may prefer in their different localities, instead of endeavoring to create new organizations. Up to the present writing, according to all information obtainable, the general impression seems to prevail that all organizations are obtaining reasonably good prices for the different varieties and grades in the respective districts.

H. F. Wilson, entomologist for the Experiment Station of the Oregon Agricultural College, has accepted a position with the University of Wisconsin, at Madison. Mr. Wilson was highly appreciated for his ability throughout the State of Oregon and Oregon feels that it has lost an able man. However, it is our pleasure to wish Mr. Wilson success in his new position.

No one man will be able to formulate a plan of publicity that will meet with the approval of all districts. Such a plan and campaign can only be worked out in detail to the satisfaction of all sections by giving the matter serious thought and revising and adapting any plan so that all districts and all contributors will be benefited.

It gets close to the trees.

See why on page 12.

Only a Car of Apples

(Continued from November issue.)

BUNCO SKINNER AT BAY

(By C. C. P.)

"Foiled!!!"

A sickening shudder shook the huddled frame of B. S., the Proud Produce Pirate, as, in a hoarse whisper he uttered this single word from between his ashen lips—"Foiled." He had just received the following telegram:

"Have your bank wire my bank to pay my draft, Bill of Lading attached, for one car apples at Dollar Box, or ring off. (Signed) Ruggles, of Red Gap."

B. S., the Proud Produce Pirate, was utterly dejected. Listlessly he lit a cigarette as he gloomily hissed—

"That sage-brush rabbit, Ruggles, must have the Blue Book! O, very well, I guess I am done."

Gradually as he smoked his courage returned. B. S. was thinking—thinking rapidly. "Am I done? No—I have it—ah, yes—'can' the B. S. 'con'—I am a DISTRIBUTOR! Better—I am THE CONTINENTAL MARKET DISTRIBUTORS BUREAU." And B. S. lit another cigarette.

This thrilling narrative will be continued in our next.
DON'T MISS A SYLLABLE.

Produce Reporter Company
CHICAGO

P.S.—Now is the time to subscribe for the BLUE BOOK SERVICE.

Low Grade or Cull Apples.—The returns on carloads of apples up to date on stock below the three established grades,—Extra Fancy, Fancy and C grade,—have been so low that frequently they have not paid the cost of freight, creating a loss which the grower must stand. In addition to this, the loss has been increased by culls preventing the sale of the established grades at profitable prices. Until this stuff is cleaned up, activity in the better grades probably will not be as active as the moderate crop justifies. As stated previously in an editorial in the November edition, it seemed regrettable that such fruit was being marketed. It now seems evident from the loss, as reported on cars shipped, that it was a mistake to have shipped any of this low-grade fruit.

H. S. Jackson, for many years pathologist at the Experiment Station of the Oregon Agricultural College, through efficient work and accomplishments, achieved a reputation extending far beyond the confines of the state in which he was working, which is evidenced by the fact that he was offered a position with Purdue University, Indiana, which, to our regret, was so attractive that Professor Jackson felt compelled to accept it. The good wishes of the fruitgrowers of Oregon and the Northwest in general who have the pleasure of knowing Professor Jackson are universal for his success and prosperity.

Every extra ten cents per box obtained on apples means \$1,000,000 more money to the Northwest. The responsibility of the future success of the apple industry does not depend entirely upon any one section, upon any set of individuals or even upon the growers themselves. This responsibility rests on all of us,—every one who is connected with the fruit business either directly as a grower or seller, every one who is connected indirectly, every banker in the Northwest and every business man in the Northwest.

1914 and 1915 have given the growers some experience and knowledge that they never before have possessed which should be of inestimable value in evolving a campaign for 1916 that will mean profitable returns to the orchard industry. Never before in the history of the apple industry of the Northwest have growers, selling organizations, bankers and business men given the fruit industry as serious thought and consideration as they have during the past two years.

We have received no data regarding the short course of the Washington State College. Full information can be received by those desiring the same by writing the Washington State College, Pullman, Washington.

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Whiter, Lighter Bread

Winter Injury of Fruit Trees More Common in Northwest

By Professor O. M. Morris, Washington Agricultural College, Pullman.

WINTER injury of fruit trees has been more common in the Northwest than we are sometimes willing to admit. The orchards as a whole have not suffered seriously, but certain sections of fruit-growing districts have been bothered with this trouble in one form or another. This trouble is not confined to any one district or any one kind of climate. Winter injury is very common on the west side of the Cascades in Washington and Oregon. It seems strange that localities with such mild winter climates should have their trees seriously injured by winter temperatures, but such is the case.

When we look about for a cause for this winter injury, we should not forget that our apple trees in particular come from climates and sections that are altogether different from the climate and soil conditions existing in most of the fruit-growing sections of the Northwest. Our apples are the direct descendants of a fruit that has its native habitat in central Europe and west-central Asia. The climate there is seldom severe, and while we may not be able to point out particular characteristics, in which it differs widely from our climate, yet we know that it is different, and that when the apples were brought to the United States, the first settlers placed them on the Eastern coast with a climate very different from that of the Western coast regions, and only a few of the varieties that were brought from Europe direct are still in cultivation. Most of them have passed out of existence; not because varieties that were larger or finer qualities were discovered, but because varieties were discovered that were in many respects more satisfactory from a cultural point of view. The list of apples grown in Washington and Oregon are practically all direct importations from the extreme eastern part of the United States. The Wealthy, Delicious, Gano, Stayman Winesap are varieties that have originated in the central part of the United States, but practically all of the others came from the Eastern States. There is not, at the present time, a variety that has found acceptance as a commercial fruit that had its origin in the Northwest. The native seedlings replaced the imported varieties in Eastern States, and it is not too much to expect that the native seedlings will in time supplant in this district the imported varieties. The adaptation of any set of varieties to local conditions is not measured so much by their ability to grow and produce fruit under the most favorable circumstances that can be placed about them, but to grow and produce a satisfactory crop of fruit, and at the same time withstand the attacks of pests and unfavorable weather conditions. These unfavorable conditions and extremes are the limiting factors that cause us to

select carefully the variety that we want to grow in any particular district.

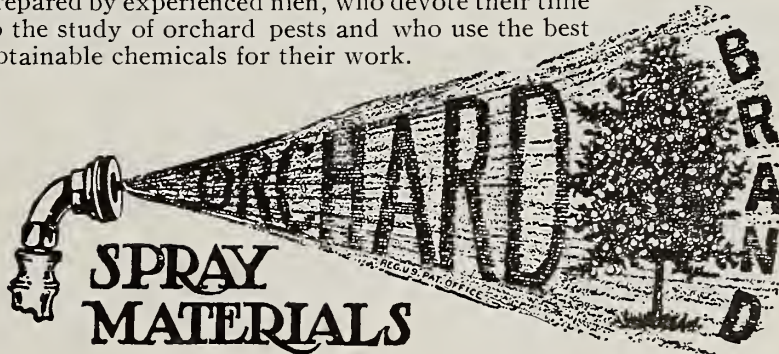
Winter injury results from two quite different sets of conditions. The first is that of a continuous dry cold, resulting in the drying out of the branches and body of the tree, and at the same time exposing it to a temperature so low that the vitality of the wood is lessened or entirely destroyed. This form of winter injury is not common in the Northwest, although it has done considerable injury one or two seasons. There seems to be no method of counteracting the effects of this form of injury, and all that can be done is to select varieties that are resistant. This is the form of injury that is very common in some parts of Iowa, Nebraska, Minnesota and the Dakotas. The other form of winter injury results from one or two conditions; that of sudden fluctuation of temperature while the plant is well filled with sap, or sudden drops to an extremely low temperature while the plant is well

filled with sap. The extreme low temperature results in the death direct of the parts of the tree exposed. This form of winter injury is common in the Northwest.

Probably the most common form in which the injury is manifest is in the freezing and injury of small twigs of last summer's growth. The twigs injured are usually the stronger and more thrifty ones, and the shorter, more slender and less vigorous branches are the last to be injured. Sometimes twigs injured in this fashion are killed direct, and the following spring show no signs of life. The bark may even dry and wither before the time for growth arrives. It very frequently assumes a dark greenish or brownish color, and remains plump, but more soft than the normal tissue, and shows no signs of withering until past midsummer. Frequently buds will develop into short branches or twigs and live until midsummer or a little later, and then die without apparent cause. This form of

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State quantity and kind of material when ordering.

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PORTLAND, OREGON

activity is common for the larger branches of last season's growth, and there is no distinct line of demarkation between this and the injury reaching down the branches to the large limbs, even to the trunk of the tree.

Careful examination of this wood will often reveal the injury within twenty-four hours after it has occurred. The cambium layer of tissue and the sap wood just beneath will be slightly darker in color. When this is found it is a good plan to prune the trees moderately severely. Do not attempt to cut out all injured parts. If the injury is so severe as to cause the discoloration of the entire layer of last year's sap and out into the green bark, then all such wood so injured should be removed. But in many cases, especially with peach trees, it is advisable to do only moderately heavy pruning. Excessive pruning will cut away the younger wood, carrying the larger part of stored food supply away, and the old wood so injured does not have the capacity of producing advantageous buds, and it may result in the death of the plant. When peach trees are injured to the extent of having their small wood killed and larger branches severely injured, it will often result in destroying their entire usefulness, and it is a wise plan to remove them rather than to waste time and energy expecting them to revive.

Another form of winter injury very common with apple trees is first manifested by the bark on the trunk and large limbs splitting open. Ordinarily this does not take place until two or three weeks after the real injury has been done. A good illustration of this happened last winter in the Spokane Valley, when in March hundreds of tree trunks were found to have the bark splitting in a perpendicular line twelve to eighteen inches long. A careful examination of the district and the weather records showed that the injury had been done about the latter part of January, but that swelling of the wood did not take place to a sufficient extent to cause the bark to split until March, when the injury became noticeable. This seems to be the result usually of sudden fluctuations of temperature; usually a sudden drop in temperature following a few slightly warm days. Apparently the lower part of the trees have had time to fill well with sap when the sudden drop of temperature freezes a large amount of water contained in the trunk and bark and in part breaks the tissue. It is found that the cambium layer is broken and nearly all of the cells ruptured. The bark peels very easily and if split with a knife will curl back from the edge of the split. This does not seem to be influenced to any appreciable extent by processes of tillage or cover crop existing in the orchard.

Still another form of injury is the collar injury or winter injury, which is probably the result of alternate freezing and thawing of the surface of the ground around the base of the tree trunks. This is usually not noticed

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until some time after the injury has been done, and at times it is found that the bark around the base of the trees is injured, and sometimes a few inches beneath the surface is dead and rotten. A year later it will be found usually that many roots of the trees are in an advanced stage of decay. This form of winter injury is often very difficult to distinguish with certainty. The presence of the earth and continuous moisture is practically sure to give serious forms of rot and fungus diseases opportunity to gain a foothold on the tissue of the root and trunk system of the tree, and when established even as a saprophyte many forms of toadstools and mushrooms will in part assume the action of a parasite and result in the death of the tree.

The last form of winter injury that I wish to mention is the killing back around the wounds made in pruning. This seldom results from pruning done in the latter part of the winter or early spring. In some few districts it is a common injury that follows fall or early winter pruning. I have not had many reports come to me of this form of injury being at all common in Central or Eastern Washington. I had an opportunity to visit a large pear orchard near Olympia where this form of injury was very apparent and had resulted in great harm to the orchard. It is more common in districts having a great deal of wet weather during the winter than where dry and even more severe temperature is common.

There is a great deal of difference in the ability of varieties to resist winter injury. Some little work has been done along the line of determining the characteristics of varieties that have strong abilities to resist winter injury, but up to date very little satisfactory data has been accumulated. It is well known that the Russian varieties of apples are very hardy in this respect. As a general thing the varieties that form their terminal buds early in the summer and become dormant in early autumn are quite resistant to extremes of temperature during the winter; also to sudden fluctuations. In this state indications are that the Stayman Winesap is one variety that will fail to reach the degree of popularity that its fruit deserves because the trees are not entirely winter hardy in many sections. The Rome Beauty, as a mature tree, is quite hardy, but it is often found that young trees are not satisfactorily resistant where too sudden fluctuations or too extremes of cold are existing.

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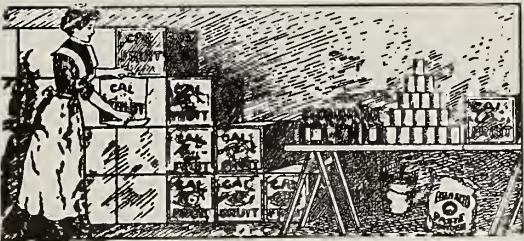


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The Spitzenberg is another variety that in some few localities shows a tendency to be easily injured by extremes and by sudden fluctuations of temperature. The King apple has a peculiar fault of being easily injured at the crown or base of the trunk. The other parts of the tree ordinarily are capable of withstanding great variations in temperature. The McIntosh Red is very hardy when compared to other varieties, in their capacity to resist extremes of temperature. The Jonathan seems to suffer more from the splitting of the bark on the trunk than any other variety commonly grown in the Northwest.

Culture and irrigation are influential factors in preparing trees for winter quarters, and in that way modifying their resistance to winter injury. Extremely late tillage or irrigation often causes trees to continue growth until late in the summer, and thereby are unable to ripen their wood and become dormant before the extreme cold weather sets in. This is not a necessary fault of irrigation or of orchard tillage, but is probably a result that not infrequently follows attempts to force an extra large growth in trees or an

extra large size of fruit. Some districts will find it possible to irrigate much later than others. But where the season is short enough so that the varieties commonly grown ripen in cool, frosty weather, late irrigation should be practiced with extreme caution.

Winter injury does not give an opportunity for the development of fungus diseases direct, but there are saprophytic fungi widely distributed and practically always starting immediately upon winter-injured wood. One form of this is very common in the Northwest, and has caused a great deal of anxiety among orchard men. They have noticed the presence of this fungus and called it canker. There are not many forms of canker existing in the Northwest, but the term has carried with it something of dread because it does not explain anything, but simply expresses the thought of a disease of rather unknown characteristics working upon the wood of the tree. All that is necessary when this fungus is found growing on winter-injured wood is to cut away the winter-injured parts of the trees and the fungus will practically always be stopped.

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National Apple Show Notes

Prizes at the Spokane Apple Show, November 15 to 20, 1915, in addition to the 100-box contest, were on 5-box lots, which consisted of many beautiful and attractive displays. The following is a list of the winners:

Spitzenberg—First prize, W. J. Hess, North Yakima, Washington; score 92.2. Second prize, H. C. Mellor, Summerland, B. C.; score 85.3. Third prize, Fred A. Benson, North Yakima; score 84.2.

Winesap—First prize, John Kern, North Yakima; score 95.5. Second prize, S. W. Bair, North Yakima; score 90.9. Third prize, W. H. Porter, Greenacres, Washington; score 89.3.

Missouri Pippin—First prize, Robert McCormick, Zillah, Washington; score 91.9.

White Winter Pearmain—First prize, J. J. Griggs, Brewster, Washington; score 93. Second prize, C. E. Chase, Brewster; score 91.8. Third prize, C. K. Huntington, Fruitland, Washington; score 82.8.

Yellow Newtown—First prize, H. Van Marter, Opportunity, Washington; score 91.2. Second prize, H. E. Fairbanks, Selah, Washington; score 89.6. Third prize, Harry E. Nelson, Opportunity; score 89.2.

Stayman Winesap—First prize, W. J. Hess, North Yakima; score 97.7. Second prize, H. C. Mellor, Summerland; score 90.3. Third prize, C. C. Shiver, Otis Orchards, Washington; score 88.1.

Grimes Golden—First prize, W. J. Enright, Chester, Washington; score 90.1. Second prize, George Cook, Naramaba, B. C.; score 80.4. Third prize, A. Davidheiser, Opportunity; score 80.1.

Wagner—First prize, W. J. Enright, Chester; score 94.2. Second prize, H. C. Mellor, Summerland; score 90.8. Third prize, Dr. W. A. McDowell, Otis Orchards; score 85.8.

Baldwin—First prize, George F. Blood, Spokane Bridge, Washington; score 87.2. Second prize, H. C. Mellor, Summerland; score 85.5. Third prize, Ed Walters, Spokane Bridge; score 83.6.

Mammoth Black Twig—First prize, H. S. Budgell, North Yakima; score 94.7. Second prize, J. F. Forrest, Otis Orchards; score 86.9. Third prize, H. D. Reeve, Otis Orchards; score 86.7.

Arkansas Black—First prize, Fred A. Brown, North Yakima; score 92.3. Second prize, H. Van Marter, Opportunity; score 89.8. Third prize, D. L. Ingard, Fruitland, Idaho; score 85.4.

Rainier—Second prize, Robert Johnson, North Yakima; score 63.6. Third prize, W. W. Scott, North Yakima; score 55.3.

Rhode Island Greening—Third prize, C. M. Lockwood, Opportunity; score 60.2.

Ben Davis—First prize, C. W. Young, Fruitland, Idaho; score 85.0. Third prize, D. J. Coffin, Wenatchee, Washington; score 61.8.

Black Ben—Second prize, Dr. S. M. McBride, Fruitland, Idaho; score 76.4. Third prize, Ed Millin, Cashmere, Washington; score 60.6.

Macintosh Red—Second prize, W. J. Enright, Chester; score 77.7.

Jonathan—First prize, H. C. Mellor, Summerland; score 91.6. Second prize, J. B. Felts, Opportunity; score 87.4. Third prize, C. S. Howatt, Otis Orchards; score 86.6.

Delicious—First prize, Wellington Dutch, Wenatchee; score 92.3. Second prize, L. E. Ludwig, Winesap, Washington; score 81.3. Third prize, A. Davidheiser, Opportunity; score 59.6.

* * *

The Washington State Horticultural meeting was held at Spokane, in the Chamber of Commerce Building, November 15, 16 and 17. The attendance was not as large as in previous years when the meetings were held in the large fruit-growing districts, but the program was very interesting and instructive. J. Howard Wright of North Yakima was elected president; J. F. Segrue, Cashmere, vice-president; F. E. Williams, Spokane, second vice-president; J. A. Harader, North Yakima, secretary; A. G. Craig, Spokane, treasurer. The next annual meeting will be held at North Yakima. The last time the meeting was held in North Yakima the attendance was between 700 and 800, so it is to be expected that next year the meeting will have an immense attendance.

* * *

The Utility Manufacturing Co., which is now manufacturing the Wood's grading machine of Ogden, Utah, gave a practical exhibition of their fruit-grading machine, which will be placed on the market throughout the Northwest in 1916, demonstrating the machine's actual operation and commanding a great deal of attention. The exhibit was in charge of Mr. M. L. de Julien, who not only intelligently but very ably showed the advantages and economy in fruit grading machines, at the same time pointing to the practicability and simplicity of his own machine.

* * *

The Washington Horticultural Society are advocating a plan for life membership with a view to creating a fund, the interest on which will be a big help in financing the annual meetings. It is planned that the life membership shall cost fifteen dollars. This plan is certainly a move in the right direction, it having been tried out by the Oregon State Horticultural Society, proving very successful, as the Oregon society already has a large list of life members.

* * *

Mr. H. C. Mellor, of Summerland, B. C., won the Grand Sweepstakes in the five-box contest, this prize being put up for the exhibitor winning the largest number of prizes in the five-box contests.

* * *

Cashmere made a very interesting booth exhibit, featuring the Skookum Brand in a very attractive manner, the display being a beautiful one indeed.

For More Milk

SHADY BROOK DAIRY FEED

Made of the finest alfalfa from the famous Gardena District and from cane molasses guaranteed 50% sugar

HERE IS THE ANALYSIS

Crude Protein	14.75%
Crude Fat	1.10%
Carbohydrates	63.96%

That's why it gives more milk for less money. Try it. Find your answer in the milk pail.

Write for booklet No. 70

Shady Brook Milling Co.
Walla Walla, Wash.

Write for name of nearby dealer.

\$60.00 an Acre

Best Bargain in the Valley for the Price. 160 acres, mostly bottom land; about 60 acres in cultivated fields and pasture, balance timber of commercial size; rich loam soil; plenty of water; good buildings; one-half mile to school; one mile to railroad station. Fall seeding finished; grain for spring seeding and feed; lots of hay; 20 head of stock; tools and machinery. \$6850 cash, balance on time.

HAZELROOK FARM
Box 1, BLODGETT, OREGON

Western Pine Box Sales Co.

HIGH GRADE FRUIT BOXES
APPLE, PEAR AND PEACH BOXES
Fruit and Vegetable Crates
GOOD SERVICE—Write us
SPOKANE, WASH.

One exhibit commanding an immense amount of attention was that made by Yakima Valley, under the direction of Mr. DeVise, which consisted of films showing the various phases of the apple industry. One particular feature which commanded a great deal of attention and interested the public was the production of a big "Y" of apples. Mr. DeVise is one of the prominent men of Yakima associated with the industry, never failing to be present when anything is being done for the improvement or betterment of the industry. Mr. DeVise is very popular among the fruitgrowers, with a very extensive acquaintance, his efforts being voluntary and most of them without reimbursement, but they are much appreciated, as he has worked earnestly in his endeavor to help the fruitgrower better his condition.

* * *

The Bean Spray Pump Co. made a practical exhibit of one of their well-known power sprayers which is so popular in the Northwest, practical demonstrations being given by the man in charge.

The Spokane fruitgrowers had one of the most novel and interesting exhibits as well as attractive in the whole show, featuring the "Redskin Brand". This whole display was rendered additionally attractive by the exhibition of Indian relics,—beads, baskets and other paraphernalia,—all being in perfect harmony and accord with the name of the brand. The exhibit of Indian relics was valued at over \$2,000. During the entire show an Indian, dressed in his native costume, was always on the job, commanding a great deal of attention.

Perhaps one of the most instructive features of the exhibit was that engaged in by six different fruitgrowers' organizations with an exhibition of different varieties of apples, consisting of fifteen boxes of each variety, five boxes of each being packed in the regular pack,—Extra Fancy, Fancy and C grade. The importance of this exhibit was its educational value in showing not only how the different grades are put up but how they should be put up.

The Schmidt Lithograph Co. had a very attractive exhibit showing the importance of making fruit attractive in packages by the use of labels. They made two displays, one group containing a number of labels which they had made for the different associations and fruit concerns throughout the Northwest, and the other booth being exceedingly attractive, showing a box of big apples with the "Skookum" label at the end of the box.

The Practical Box Marker Co., Otis Orchards, Washington, commanded a great deal of attention because they were exhibiting their roller stamps which are designed to stamp on the end of the box, in one movement, the variety, grade, number of apples contained in the box and the grower's name. The growers took much interest in this exhibit because every fruit-grower is out these days for something to save money in the cost of production.

One of the most attractive exhibits of the whole show was that made by the Yakima Valley Fruit District Growers' Association, consisting of Winesaps, 100 boxes being arranged in the form of a large letter "Y". The apples were all of magnificent color, beautifully packed and the whole exhibit exceedingly attractive.

Mr. Henry Tweed of Pullman, who prepared the exhibit from Brewster which won the Sweepstakes at the Panama Exposition, was much commended by the many fruitgrowers who were present over his success in preparing the exhibit which won the prize.

Mrs. S. A. Wright of Opportunity, Washington, exhibited a new variety of apple known as "The Oregon Red Winter," which won the prize for the best new variety on exhibition at the show.

The Alpha Automatic Power Spray Outfit

(PATENTED)

Fitted with 2-in. or 2½-in. AUTOMATIC DUPLEX or TRIPLEX PUMP

The Automatic Pressure Governor Insures Safety, Secures Uniform Pressure and Eliminates Unnecessary Wear. Relief Valve Not Required.

Insures
Safety

Secures
Uniform
Pressure
and
Eliminates
Unnecessary
Wear

Top Guard
Rails Fold
Up or
Can Be
Quickly
Removed

Gear or
Belt
Driven

No Relief
or
Diaphragm
Valve
Required

Brass Fitted
Throughout



Fig. 1693

Equipped with the New Mechanical Pressure Control.

THE TWO ESSENTIALS in a power sprayer are a thoroughly dependable engine of ample horsepower and a positive and reliable pressure regulator that will insure uniform pressure and eliminate unnecessary wear.

THE AVERAGE SPRAY RIG is equipped with a cheap engine and a make-shift pressure relief valve or diaphragm which is exposed to the corrosive action of the spray material, which soon puts it out of commission.

THE ALPHA AUTOMATIC PRESSURE GOVERNOR with which the Alpha Spray Outfit is equipped is a simple arrangement of two levers and a spring on each plunger connecting rod, which, when the pressure reaches a pre-determined limit, automatically discontinues the operation of the pump without interrupting the driving power, again permitting it to resume operation when the pressure falls below the point at which it has been set.

THIS INSURES SAFETY, secures uniform pressure, and eliminates unnecessary wear (no liquid pumped except it passes through the nozzles), the pressure relief is not dependent on the operation of a sluggish or defective relief valve, but is positive and mechanical, thus making it impossible to run the pressure up to the danger point.

THE POWER PLANT, depending on the size rig, is either a 2½-H.P. or a 3½-H.P. Alpha Engine, equipped with a "built-in," gear-driven, positively-timed magneto, requiring no batteries or coil, and is easily started on the magneto without cranking.

CAN YOU AFFORD to own a spray outfit that will balk? When you get ready to spray you have no time to tinker with a defective engine, pump or relief valve, but want an outfit that is capable of a continued high pressure maintenance and one that is thoroughly dependable in every particular.

THE ALPHA AUTOMATIC SPRAY OUTFIT will meet your most exacting demands. The entire framework is made of channel and angle iron, fitted with a wrought steel bedplate on which the engine and pump are mounted, direct connected with machine-cut steel gears.

BUILT IN ALL SIZES from a 2-inch pump and a 100-gallon tank to a 2½x3-inch pump and a 200-gallon tank, either duplex or triplex.

IT WILL PAY YOU to investigate thoroughly the merits of the Alpha Combination Power Sprayer before buying. Send coupon for Catalog C-2 and prices.

De Laval Dairy Supply Co.

SEATTLE—SAN FRANCISCO

Everything for the Dairy.

DE LAVAL DAIRY SUPPLY CO.,
1016 Western Avenue, Seattle, Wash.

Please mail your Catalog C-2 describing your Alpha
Sprayer Outfit to—

.....Name

.....Address

The O.-W. R. & N. made a very attractive, interesting and instructive display, which commanded a great deal of attention. Experts lectured and demonstrated, showing the uses of different varieties of apples, the best season for consumption and also the best varieties for cooking.

The Hardie Manufacturing Co. had one of their latest model sprayers on exhibition, which was ably demonstrated and explained to all inquiring orchardists by one of their competent salesmen.

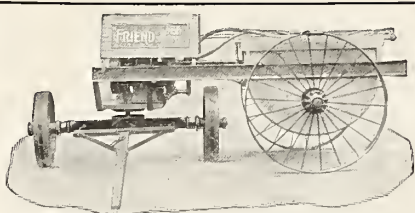
Zillah district had a strong feature exhibit presided over by Mr. H. Furman.

A boys' band, composed entirely of boys from 6 to 15 years of age, not only rendered excellent music but was quite a feature in the show.

The Washington Agricultural College of Pullman was prominent as usual with one of their educational displays for the benefit of the fruitgrower.

Mrs. Blanche Wylie of Spokane daily distributed a number of apple favors to all visitors by giving away apples and tickets for apple cider.

In the cookery contest, one exhibitor displayed 52 kinds of apple jelly labeled "One kind for every week in the year."



Sprayers Go Up

Not in price but numbers
Since August first more than four times
as many

"FRIEND" Power Sprayers

have been sold than last year for same period. See last issue of "Better Fruit" and learn why.

Don't Delay, But Do It "Now"

Join the "Friend" Club by the purchase of a Power Sprayer, Hand Sprayer, Unique Pressure Regulator for your old power sprayer, Variable Spray Nozzle or the new 50c Nozzle. Get the "Friend" Spirit. Catalog free.

"Friend" Mfg. Co., Gasport, N. Y.

**The Powerful One Man
Kirstin**

Strong, simple, speedy
—this one man way of turning
stump land into cash income is
the way for you. Many fine, at-
tractive features, such as the

TRIPLE SPEED

This splendid feature lets you
triple the speed after the stump
has broken loose. That means
something to the man who owns
a Kirstin.

GET FREE CATALOG NOW

KIRSTIN SALES COMPANY
350 E. Morrison St. Portland, Oregon

The Idaho Agricultural College exhibited some very interesting information, portrayed on charts, showing the results obtained in a comparative way between summer and winter pruning.

One of the most educational and instructive features of the Apple Show was the by-product exhibit, a number of prizes being given for all kinds of by-products made from apples.

The Oregon Agricultural College exhibited a very interesting chart showing what varieties of apples are best adapted for sauces, jelly and various other desserts.

The Oregon Horticultural Society held its annual meeting in Corvallis November 16, 17 and 18, which was attended by a very large and enthusiastic audience. Every one present reported the program the most instructive of any for a number of years. In addition to this, which probably was the most important part of the program, was the featuring of exhibits and the instruction given in connection there-

with by the professors and their assistants in the different departments of horticulture. Apples were exhibited from nearly every fruit-growing state in the Union. These exhibits proved very interesting and instructive. The following officers were elected: R. C. Washburn, president; B. W. Johnson, vice-president; C. D. Minton, secretary-treasurer. The next annual meeting will be held in Hood River.

Protect Young Apple Trees.

It is time to protect newly planted apple trees against winter girdling by mice and rabbits. A tree thoroughly or even partly girdled has little or no chance to live without expert bridge grafting, which is not especially easy, at least for the man who is unaccustomed to it. Perhaps the best protection is obtained by using a thin wooden veneer wrapper which has been soaked to keep it from breaking, then bent around the tree, and held in place by a single wire about the middle. The wire stays in place better if passed through a hole near the outer edge of the veneer wrapper. The wrapper should be pushed down into the earth so that mice cannot burrow under it, or they may be shut out by heaping soil up around the bottom of the case and tramping it firm. Coiled screen wire may be used in much the same way, but it is more expensive. The veneer wrappers do not usually cost more than half or three-quarters of a cent apiece, and can be secured from any orchard supply house.

Bunches of long grass or split corn stalks may give good protection against rabbits, but fail to keep mice from doing harm. Newspapers or tar paper wrapped around the tree trunk have been used with some degree of success by many orchardists.

Paint and washes do not give good results, as the rabbits sometimes seem to attack the washed trees more than the untreated ones.

Damage from mice should be avoided by the removal of all loose, trashy material from the neighborhood of the base of the tree trunk. If the ground has been fall plowed, the under furrow slice furnishes a good nesting place for mice and the nearby trees are likely to

What are your dairy problems?

To get started profitably in dairying as a side-line, the fruit grower needs helpful advice and suggestions.

Our service department will delight in doing this very thing, without any charge or obligation.

We are sole Oregon distributors for "Simplex" Separators, B-L-K Milkers, Papec Ensilage Cutters, Simplex Silos and all kinds of dairy, butter-making and cheese-making supplies.

Your name on a postal will
bring Free Catalogs

Monroe & Crisell

126 Front St.

Portland, Oregon



It does not disturb the fruit burdened branches.

See why on page 12.

suffer, but if the ground near the tree is clean and well compacted, little damage will be done by these rodents.—C. C. Wiggans, College of Agriculture, University of Missouri.

Exports of green apples to Europe for the week ending November 13, for the first time this year, exceeded the exports of the corresponding week of 1914. During the week 93,823 barrels were exported, as against 89,383 for the previous year. The total exports of the season are 530,924 barrels, compared with 998,644 barrels last year.

Pear Trees for Sale

I have a large lot to offer of the following sorts: **Bartlett, Anjou, Bosc, Winter Nelis, B. Clairgeau, Howell, Comice** and other varieties. All budded trees, one and two years old.

I also have **Plum and Prune Trees** budded on plum, and budded **berry-bearing and seedling Holly Trees** from 2 to 5 feet. Also **Mazzard Cherry** and **Marianna Plum** stocks for nursery planting.

Good stock at very low prices to Nurserymen, Dealers and Planters.

JAMES W. STEPHENS

Kelso, Washington

Economies in AppleHarvesting

Continued from page 15

wider wagon than the one I used, or a double-decker. My wagon held only 24 boxes, when a wider wagon could be made to hold 36 boxes or more, or a double-decker 48 or more. This, of course, would make quite a reduction in the expense, saving time lost with the small wagon, hauling from the orchard, but of course would not save any time in loading or unloading in either case, as this expense would be the same on the larger or smaller wagon.

Help in the packing house cost me .0086. This consisted of having a man put the apples on the sorting table. Considerable saving could be made in this department with the right kind of a storage house and a good floor, which will enable the helper in the packing house to load the apples on a truck which would hold 24 boxes instead of carrying them one by one, leaving him part of his time, with this arrangement, to assist in grading, also helping to reduce the number of men required on the grading. The floor in my packing house, not being on a level with the storage equipment, necessitated my having the apples carried by the box instead of being wheeled in on a truck.

Hauling knocked-down boxes to the packing house cost me .0025. This cost could also be reduced by having a larger wagon which would hold a greater quantity, requiring no more time than a wagon containing a smaller quantity of boxes. My wagon was only large enough to haul 250 boxes, knocked down, at a time, whereas the proper-sized wagon should be one which would hold 100 to 110 boxes packed, which would hold 400 knocked down boxes, which would reduce this cost about 33 1/3 %.

It cost to nail up and stamp the boxes .0096. The man doing this work had some spare time, although it was all charged against the nailing cost. This time he spent in removing any apples which got into any one of the grades through carelessness or any other cause on the part of the sorters and graders. The stamping was done with rubber stamps. An additional saving could be made by using the latest patented devices for stamping the boxes with the number of apples, the grade, and the variety all at one time instead of having to use separate rubber stamps for each of these marks. Just how much this nailing-up cost could be reduced it is difficult to say, but I am inclined to think it could be done at one-quarter to one-half a cent less.

The boxes cost me 9 cents each. This price seems to be as low as any price I have heard of. A lower price could only be secured in accordance with the price of lumber and by ordering the boxes of your association, which could place an order with some mill for an extra large quantity early in the season, thereby securing a lower price.

The paper cost me .0331. No saving could be made in this item except

PICTORIAL REVIEW



CHRISTMAS 1915

FIFTY CENTS A COPY \$1 DOLA YEAR

Pictorial Review THE MAGAZINE ALL WOMEN FOLKS WANT

For a limited time only we are able to offer our subscribers a very liberal bargain. We can think of no magazine which is so popular with the women folks of America as PICTORIAL REVIEW. The popularity and attractiveness of PICTORIAL REVIEW has been the talk of the magazine world—It is the home and Fashion Guide for 1,250,000 women.

Fashions and Household Helps

For almost ten years PICTORIAL REVIEW has stood supreme in the world of fashion. Besides there are general household helps and hints in every issue of the magazine—the sort of information which every practical house-keeper delights in.

Biggest and Best Offer

“Better Fruit” 1 year \$1.00 Both for \$1.65
Pictorial Review 1 year 1.50—\$2.50 only

\$100,000 for Fiction

\$100,000 has been paid for fiction which will appear in PICTORIAL REVIEW this next year. Four great serial stories by world-famous authors. From four to eight short stories by the best short story writers in the world will also appear in each issue. Besides there will be fact and feature articles that will interest all.

This offer is for a very limited time only, therefore send your order soon and you save 85 cents on your subscription investment.

This combination makes a valuable Christmas Gift for the fruit grower and his wife.

Address “BETTER FRUIT,” Hood River, Oregon

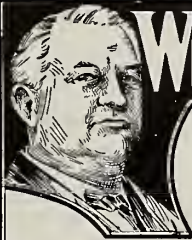
Prune and Grafted Walnut Trees

Also Apples, Pears, Peaches, Plums, Apricots, Cherries, Small Fruit Plants, Etc.

Can be bought now at Greatly Reduced Prices

Write today submitting your want list for quotations.

LAFAYETTE NURSERY CO., LAFAYETTE, OREGON



Well Water Under Pressure


Your stock need water direct from the well at even temperature, winter and summer

You know that your cows will give more and better milk if they have plenty of fresh, cold water to drink. With my Milwaukee Air Power Water System the water is always at well temperature, and wonderful results are shown when compared with water that has been stored in tanks.

Simply turn the faucet and you get water under a good pressure at any point in the house or on the farm.

Send for my descriptive booklet

THOS. J. ROSS
279 E. Morrison Street
Portland, Oregon



Go Home for Christmas

The holidays will soon be here. The time of happiness and cheer. Your friends will be expecting you to come home. So will mother, father, sister or brother.

LOW HOLIDAY FARES

will be available for the holidays. On sale between all Southern Pacific stations in Oregon and California.

Ask the local agent for fares, limits of tickets and other information or write

SOUTHERN PACIFIC

John M. Scott, General Passenger Agent.
Portland, Oregon



TWO DAILY LIMITED TRAINS EAST

THE INLAND EMPIRE EXPRESS NORTH BANK LIMITED

PORTLAND TO SPOKANE, ST. PAUL, DES MOINES,
CHICAGO, DENVER, KANSAS CITY, ST. LOUIS

FASTEST ROUTE BETWEEN THE NORTHWEST AND CALIFORNIA

"The North Bank Rail" and Twenty-six Hours' Ocean Sail on the Mammoth Steel Liner, SS. "Northern Pacific" (licensed for 800 passengers), sailing every four days, approximately, between Portland and San Francisco, via Flavel-Astoria.

December Sailings from Portland—December 7, 11, 16, 21, 25, 30.

Best of the Trip in Daylight. Same Time and Rate as All Rail.

Call or write for details about the 15-day de luxe cruises to Hilo and Honolulu of SS. "Great Northern," December 16, January 5, 25, February 14.

TICKET OFFICES

Fifth and Stark Streets and North Bank Station, Tenth and Hoyt, PORTLAND
SPOKANE, Davenport Hotel. SEATTLE, 107 Yesler Way, Corner Second Avenue and Columbia
SAN FRANCISCO, 665 Market Street

R. H. CROZIER, A. G. P. A.
SPOKANE, PORTLAND & SEATTLE RAILWAY
PORTLAND, OREGON

15,000 PEAR TREES Mostly Anjou and Bartlett Also Other Varieties

Extra fine trees, clean and well grown. Can make you very attractive prices.
We have also a general line of nursery stock.

CHRISTOPHER NURSERIES, Christopher, Washington

through the ability of your association manager to secure supplies in this line at a less price by placing a very large order early with some paper mill anxious to secure the business.

Superintending cost me .01 per box. I charged up my own time at only \$2.00 per day while engaged in this line of work. Considerable saving could be made in this expense in accordance with the quantity of apples harvested, as I could have rendered the same service on twice the amount of apples, which would have reduced this cost to one-half cent per box.

I desire to call your attention to the way these costs should be ascertained. A perfect record should be kept of each man's time and every item of expense in every one of these twelve items connected with harvesting the crop. Most growers figure their picking expense per box on the actual number of boxes packed out, which is incorrect and a way that will never show you anything comparatively. This cost should be placed on the entire number of boxes picked, whether they are packed out or sent to the vinegar factory. The grading cost per box also should be placed on the entire crop, whether packed out or sent to the vinegar factory. Making up the boxes should be figured on the actual number of boxes packed; packing on the actual number of boxes packed; orchard hauling on the total number of boxes harvested; association hauling in the same way,

because it makes no great difference in the cost whether the apples go to the warehouse or to the vinegar factory. Help in the packing house should be figured on the total number of boxes harvested. Knocked-down-box hauling should be figured on the total number of boxes packed out; nailing up on the total cost of the boxes packed out, and the cost of boxes on the total number packed out. Paper should be figured also on the total number of boxes packed out, while superintending should be figured on the total number of boxes harvested, whether packed or not. Permit me to say that these costs are determined on a crop of 5520 boxes packed out and 530 boxes to the vinegar factory; total crop 6050 boxes. The 530 boxes going to the vinegar factory made .087% of the total crop; 300 boxes, or .049% being windfalls and the other 230 boxes, or .038% being culls due to all other causes such as bruises, scab, stings, worms, etc. I had 76% 4 tier, 17% 4½ tier, 7% 5 tier and 89% extra fancy and fancy combined, and 10.2% C grade.

Allow me to state the costs of each department connected with harvesting, with the hope that this information will help some of you to do the work more efficiently and more economically than I have done it, because I believe it can be done for much less and considerably better. Cost of harvesting per box in my orchard was as follows: Packing, \$.04; picking, \$.05-46; grading,

\$.0321; making boxes and nails, \$.01; orchard hauling, \$.0087; association hauling, \$.0205; help in packing house, \$.0086; knocked-down-box hauling, \$.0025; nailing up and stamping, \$.0096; box, \$.09; paper, \$.0331; superintending, \$.01; total, \$.3197.

The cost of harvesting a crop of apples can be reduced in proportion to facilities afforded, through economy in material and the wages paid the workmen. I also desire to call your attention to the fact that a saving can be made by maintaining a well-balanced crew in each department of harvesting so that no one department will be held up by a lack of efficiency or help in any other department. It goes almost without saying that the larger the crop the more economically the work can be done. My crop was a moderate sized one, and I want to be frank and state that I know many growers harvested at a less cost than I did this year. My aim has been to outline a plan showing the costs, which would afford every grower a comparison and thereby be of value to him, enabling him to determine where he could reduce his cost in any department, whether his crop be large, of moderate size, or even a small crop.

In conclusion permit me to state that I think the following savings could be made in each one of the departments in my classification. A saving could be made in: Packing, \$.005; picking, \$.015; grading, \$.0075; orchard hauling, \$.0037; help in packing house, \$.0044; hauling knocked-down boxes, \$.001; nailing up, \$.0034; superintending, \$.005; total, \$.045. Or, in other words, I believe a crop of apples can be harvested, with proper facilities and business-like methods, at a cost of \$.2757, which is just about one-half of what harvesting cost us four or five years ago.

ONE MAN is all that is needed.

See why on page 12.

FEIJOA SELLOWIANA

A wonderfully delicious fruit of delightful aroma. About size of hen's egg. Remarkable keeper and shipper. Pre-eminently adapted to Pacific Coast. Will stand temperature of 10 degrees above zero. Be first to plant and reap greatest profits. Illustrated circular free.

GIANT WINTER RHUBARB

From 1/2 of an acre first season after planting I sold over 20,000 pounds of rhubarb, receiving for same \$673.70. Reduced prices on plants. Booklet free.

W. A. LEE, Covina, California

Hood River Pruning & Grafting Wax

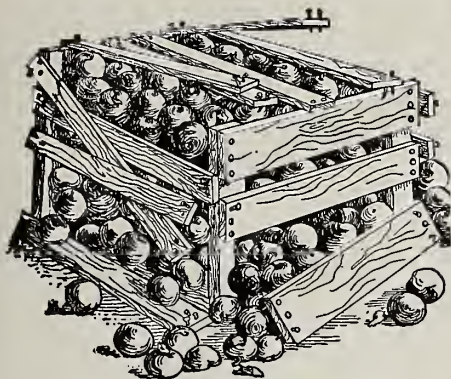
READY FOR USE

Without Heating

1-lb. Can, postpaid, 60c

Made by

A. NIEHANS, Hood River, Oregon, R 2



BEFORE using Cement Coated Nails

Western Cement Coated Nails for Western Growers

Our Cement Coated Nails are always of uniform length, gauge, head and count. Especially adapted to the manufacture of fruit boxes and crates. In brief, they are the Best on the Market.

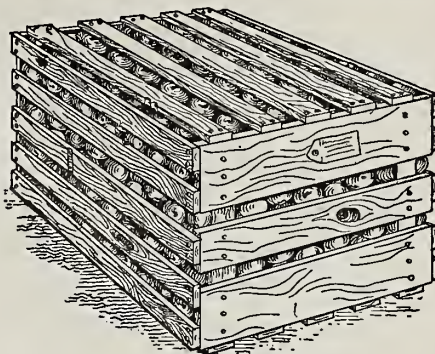
Write for Growers' testimonials.

Colorado Fuel & Iron Co.

DENVER, COLORADO

Pacific Coast Sales Offices

Portland, Spokane, San Francisco
Los Angeles

AFTER use of C. F. & I. Co.'s
Cement Coated Nails.

Pruning for Increased Color and Yield

By Professor C. C. Vincent, Moscow, Idaho.

PRUNING orchard trees is one phase of orchard management that has been discussed by practical orchardists and experiment station men at various horticultural meetings for a number of years, hence much has been said and written upon it. But

notwithstanding this fact, it is very imperfectly understood by the masses of people and often wholly disregarded. While it is true we possess climatic conditions very favorable to the growth and perfect development of our fruit trees, which renders unnecessary much of the labor and expense attached to fruit growing in the Eastern States; pruning to an ideal through the various successive stages will be absolutely necessary in order to obtain best results. Intelligent pruning is ever productive of the most satisfactory results, but when it is done indifferently without any regard to the object to be accomplished, an entirely different effect is produced.

The tree is pruned, at various seasons of the year to accomplish very different results. While no fixed rules can be given regarding pruning that will apply to every tree everywhere, there are, however, a few principles which, if kept in mind by the operators, will facilitate matters considerably. Each variety offers problems peculiar to itself, that can be solved only by the good judgment of the man with the pruning shears, but the following points should be observed in every case: (1) All crossing limbs should be removed for spraying is quite an item in the expense of the orchard, and with all superfluous limbs removed before the application, less material will be needed. (2) Prune to encourage the production of fruit rather than wood. (3) Prune to prevent the lower limbs from hindering cultivation; the upper ones from growing out of easy reach for spraying and picking. (4) Prune to prevent the "off-year habit" in trees. (5) Prune to correct too compact or too spreading growth of top.

Since there is no other phase of orchard management that requires as much knowledge and experience as that of pruning, the grower's success will be based largely upon the observance of the above-mentioned rules. As pruning is such a vital factor in the development of a commercial orchard, the time of performing the operation is important. The season for pruning

orchards is generally winter or early spring. In the minds of many orchardists, no other reason is known aside from that of convenience. The growers should know the principles involved and where winter pruning may, with profit, be exchanged for summer



**48 tons
by hand**

One man, alone, can pull any stump that can be pulled by any horse power machine. Merely work a lever and easily pull 48 tons weight—all an inch-steel cable will hold. A mechanical wonder.

**K HAND POWER
Stump
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H. M. GILBERT, General Manager

FRED EBERLE, Asst. Manager

pruning. Generally speaking, an apple tree may be pruned in any month during the winter without any serious injury, but experiments have proved that there is a definite time during the winter months when it may be done more advantageously—in late winter or early spring. At either of these times the flow of sap is not far distant and the wood heals quicker, thus preventing excessive drying. It is not good policy to prune in midwinter, as the wounds remain too long exposed to the action of the rains, winds, etc., before healing takes place. Early winter pruning, or soon after the leaves fall is preferable to that of midwinter, since there is usually enough sap to start the callousing-over process before severe winter comes on.

The effect of annual winter pruning of the tree is to produce wood rather than fruit. The reason for that can be explained as follows: In a thrifty, healthy, unpruned tree, there appears to a balance between the roots and the top of the tree, or in other words, a sufficient number of rootlets to furnish every bud or growing part of the tree with the necessary elements for plant growth. If too many of the large limbs are removed, there is a lack of equilibrium, and when spring comes the roots still send up more food material, thus causing more sap pressure on each bud. As the amount of pressure on the bud determines its rate of growth, a longer shoot is the result. Thus we can readily see why discretion should be used in pruning orchards, especially neglected orchards. Neglected trees may be brought into a good state of bearing by removing only a part of the wood the first year. If badly neglected, two or three years should be used in bringing the tree back to its natural self. A too severe cutting back will result in a thicket of watersprouts.

Summer pruning heretofore has not been generally practiced in the United States. One reason for this tardy adoption has been that growers did not know of the method. Besides, there is real inconvenience to it. Usually during the summer the grower is busy, cultivating, spraying or irrigating, and does not care to take the time for the necessary pinching or cutting back re-



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quired. However, summer pruning should be more widely practiced by orchardists, for it not only has a tendency to bring the tree into earlier bearing, but actually increases the yield and admits sunlight, which colors the fruit more highly, as indicated in the tables presented below. If summer pruning is followed, the best time to perform the operation is the latter part of July or early August, or about ten days after the terminal buds have set. At this time the tree has practically finished growing for the year. Success will depend largely upon when the work is performed for the following reasons: If the pruning is done before the tree has ceased growing, it will have a tendency to force out the adventitious buds and buds below the cuts, which results in a growth of shoots. On the other hand, if done too late in the season, no opportunity is given the buds to swell into fruit buds, which is the object sought by summer pruning. Where summer pruning is practiced, the tendency is to produce fruit rather than wood. The principle involved is as follows: During the early summer, much of the food is used by the tree in throwing out leaves and making new growth. By removing part of the growth at just the proper time, some of this reserve food material will be deposited in and behind the buds, causing them to increase in size considerably, and thus producing fruit buds.

During the past few years the Horticultural Department of the University of Idaho has been conducting experiments to determine whether summer pruning presented any advantage over that of winter pruning and vice versa. The trees under observation, representing the Wagener, Rome, Grimes and Jonathan varieties, were planted in 1905, and the pruning began that year. The trees in the block set aside for winter pruning have received a moderate annual cutting back since the time of planting, while those in another block have been summer pruned. The pruning in both cases consisted in shaping the tree and cutting back from one-fourth to one-third of the terminal growth. The trees were all grown under like conditions as regards soil and climate without irrigation.

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Pruning for Increased Yield—Result of Summer vs. Winter-Pruning Experiments.

TABLE I.

Variety	Year	When Pruned	Av. Yield per Tree	Per Cent Increase
Wagener..	1910	Winter	29 lbs.	86.2
		Summer	54 lbs.	
Wagener..	1911	Winter	18 lbs.	227.8
		Summer	59 lbs.	
Wagener..	1912	Winter	67 lbs.	83.6
		Summer	123 lbs.	
Wagener..	1913	Winter	22 lbs.	131.9
		Summer	51 lbs.	

Increase 4-year period, 111%, or 136 to 28 pounds.

During the four-year period there was an increase in favor of the summer-pruned Wagener of 111%, varying throughout the four years from 83.6% increase to 227.8% increase.

TABLE II.

Variety	Year	When Pruned	Av. Yield per Tree	Per Cent Increase
Grimes...	1910	Winter	14 lbs.	42.8
		Summer	20 lbs.	
Grimes...	1911	Winter	61 lbs.	19.7
		Summer	73 lbs.	
Grimes...	1912	Winter	74 lbs.	36.5
		Summer	101 lbs.	
Grimes...	1913	Winter	99 lbs.	86.8
		Summer	185 lbs.	

Increase 4-year period, 52.8%, or 248 to 37 pounds.

The Grimes showed, during a four year period an increase of 52.8% in favor of the summer-pruned tree. The per cent of increase varied from 19.7% in 1911 to 86.8% in 1913.

TABLE III.

Variety	Year	When Pruned	Av. Yield per Tree	Per Cent Increase
Jonathan..	1910	Winter	29 lbs.	13.8
		Summer	33 lbs.	
Jonathan..	1911	Winter	35 lbs.	*66.7
		Summer	21 lbs.	
Jonathan..	1912	Winter	95 lbs.	00.0
		Summer	95 lbs.	
Jonathan..	1913	Winter	128 lbs.	13.3
		Summer	145 lbs.	

*Decrease.

Increase 4-year period, 2.4%, or 287 to 29 pounds.

Paddock & Whipple, in their book entitled, "Fruit Growing in Arid Regions," say that summer pruning is supposed to incite fruitfulness, but does not always give uniform and satisfactory results. While our Jonathan show an increase of 2.4% during the four-year period in favor of the summer-pruned trees, the per cent during the period varies from 13.8% increase to 66.7% decrease.

TABLE IV.

Variety	Year	When Pruned	Av. Yield per Tree	Per Cent Increase
Rome....	1910	Winter	14 lbs.	00.0
		Summer	14 lbs.	
Rome....	1911	Winter	65 lbs.	*116.6
		Summer	30 lbs.	
Rome....	1912	Winter	53 lbs.	9.4
		Summer	58 lbs.	
Rome....	1913	Winter	52 lbs.	63.4
		Summer	85 lbs.	

*Decrease.

Increase 4-year period, 1.6%, or 184 to 185 pounds.

There has been but very little difference between summer and winter pruning of the Rome during the four-year period. An increase of 1.6% is noticed in favor of the summer-pruned trees.

TABLE V.

	Winter Pruned	Summer Pruned
<i>Jonathan, 9 trees</i>		
Number of Extra Fancy.....	992	5447
Number of Fancy.....	4175	2795
Number of C Grade.....	4138	335
Number of culls.....	322	0
Average yield per tree....	1069	953
<i>Rome, 9 trees</i>		
Number of Extra Fancy.....	350	1186
Number of Fancy.....	473	422
Number of C Grade.....	587	89
Number of culls.....	0	0
Average yield per tree....	156	188

Table V presents some interesting results. It shows the number of extra fancy, fancy and C grade apples picked from the winter and summer-pruned trees. Where summer pruning was practiced on Jonathans, 53% of the apples were extra fancy and 32% fancy, while from the winter-pruned trees only 13% of the apples were extra fancy and 43% fancy. Not only did we secure a large percentage of highly-colored fruits, but we were able to pick the apples in the summer-pruned blocks at least two weeks earlier than we could have done otherwise. Then again, as the Jonathan water-cores so badly and breaks down in transit when left on the trees too long in the fall, his objectionable feature was eliminated when summer pruning was practiced. To secure a high percentage of highly-colored apples, summer pruning is recommended.

Comparative Value of Different Grades

TABLE VI.

JONATHAN—NINE TREES.

<i>Extra Fancy</i> (boxes at \$1)		
Winter pruned, 6% boxes.....	\$ 6.60	
Summer pruned, 36% boxes.....	36.33	
Gain for summer pruned....		\$29.73
<i>Fancy</i> (boxes at 75c)		
Winter pruned, 27% boxes.....	20.87	
Summer pruned, 18% boxes.....	14.00	
Loss for summer pruned....		6.87
<i>Choice</i> (boxes at 50c)		
Winter pruned, 27% boxes.....	13.80	
Summer pruned, 2% boxes.....	1.10	
Loss for summer pruned....		12.70
<i>Culls</i> (boxes at 10c)		
Winter pruned, 2% boxes.....	.22	
Summer pruned, none.....	.00	
Loss for summer pruned....		.22
Net gain for summer pruned	9.94	
Average gain for nine trees..	1.10	

ROME—NINE TREES.

<i>Extra Fancy</i> (boxes at \$1)		
Winter pruned, 4 boxes.....	\$ 4.00	
Summer pruned, 13% boxes.....	13.50	
Gain for summer pruned....		\$9.50
<i>Fancy</i> (boxes at 75c)		
Winter pruned, 5% boxes.....	4.00	
Summer pruned, 4% boxes.....	3.65	
Loss for summer pruned....		.35
<i>Choice</i> (boxes at 50c)		
Winter pruned, 6% boxes.....	3.35	
Summer pruned, 1 box.....	.50	
Loss for summer pruned....		2.80
Net gain for summer pruned	6.35	
Average gain for nine trees..	.70	

To show the comparative value of the different grades, I wish to call your attention to Table VI. Estimating the value of extra fancy apples at \$1.00 per box; fancy at 75 cents; choice at 50 cents and culls at 50.00 per ton, there is a gain of \$1.10 per tree in favor of the summer-pruned Jonathan trees. Trees set thirty feet apart each way give approximately fifty trees to the acre. A gain of \$1.10 per tree would give a total gain of \$55.00 per acre. It is evident from the above data that summer pruning does pay and pays well: First, by increasing the yield materially; second, by securing fruit of maximum size and color; but we must not forget that in order to secure these results, proper attention must be given to the various other phases of orchard management such as irrigation, cultivation, spraying, thinning and fertilization.

Mr. Fred Graham, industrial agent of the Great Northern Railway, who was in Portland last week, figures that the excellent prices and good crops this year will put the apple grower on a good sound footing.

What Fruit-Growers Say



"To see ourselves as others see us."—We had such an opportunity the other day in a letter the manager of the Santiam Fruit Colony wrote a prospective purchaser in answer to his inquiry regarding the Caterpillar "30." Here are a few characteristic paragraphs:

"Regarding track item:—Of course, there is an expected amount of wear, but the splendidly arranged adjustment takes care of this quite satisfactorily."

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"If you are going to buy a tractor, our opinion is that you will make no mistake in selecting a Caterpillar."

Let us give you the name of a Caterpillar owner near you, and then see for yourself what he'll write you.

The Holt Manufacturing Company

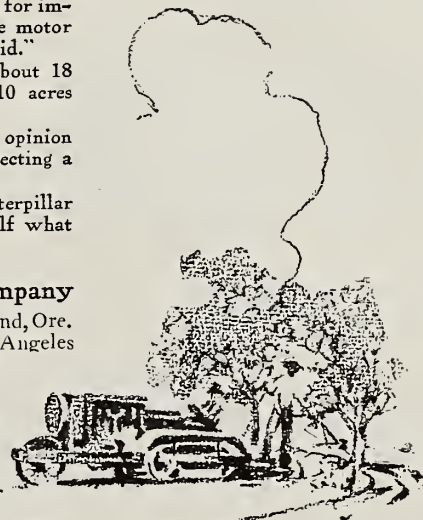
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San Francisco Stockton Los Angeles

CATERPILLAR

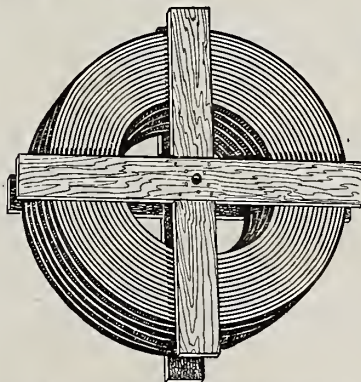
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Use Peerless Duplex Strapping

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- (1) You will prevent pilfering.
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No. 3 Peerless Duplex Strapping in coils of 6,500 feet each—\$14.63 per coil with liberal discount.

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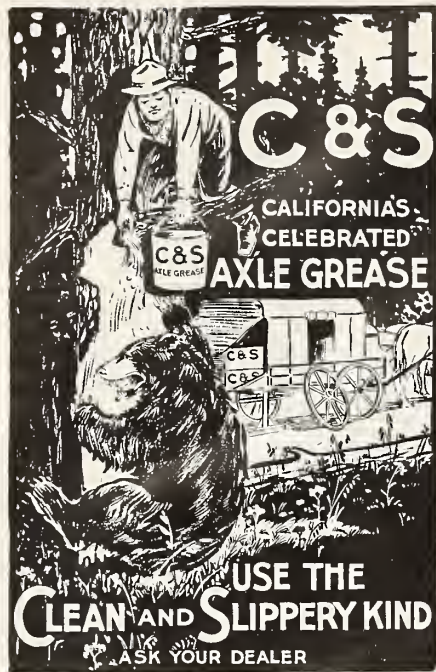
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Destroy the Woolly Aphis Now

"The woolly aphis is one of the most serious pests of the apple tree, for the reason that it lives not only above the ground on the leaves and bark, but it also infests and seriously injures the roots," said H. A. Surface, state zoologist of the Department of Agriculture, Harrisburg, Pennsylvania.

"Its injury to the trees is done by piercing the living tissue with the sharp beak or proboscis, and injecting a poisonous saliva and sucking out the modified sap. Its presence prevents the healing of wounds where it prefers to live, or causes knots which are abnormalities that prevent the flow of sap and the normal growth of the tree.

"A tree that is attacked by woolly aphis at the roots remains stunted, it does not bloom early in the spring nor do its leaves and fruit become large. The knots on the roots caused by this pest are nearly as bad as the knots caused by crown gall. They check the flow of sap and cause the springing up of numerous shoots or root suckers, which appropriate the food taken from the soil by the roots, and continue further to stunt the growth of the tree and impair its fruitfulness and reduce the size of the fruit.

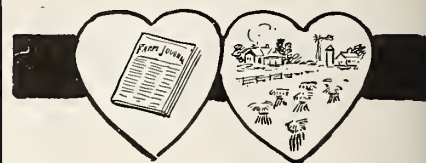
"In the fall of the year the woolly aphids can be seen in clusters around wounds in trees, or even around twigs that are not damaged, and at the bases of leaf stalks and other places where they can get a start. The females deposit their eggs beneath the edges of bark or in cracks, and then proceed to go to the roots of the trees. It is fortunate that the horticulturist can see the pests before they reach the roots, and can thus tell when the trees are liable to become seriously infested.

"It is very important for every apple grower to look over his orchard in the fall of the year and see if the woolly aphids are present. If so, he will be able to observe small tufts, like cotton, which upon crushing are found to yield a brown liquid. By carefully examining without crushing he will find the dark-colored bodies of the woolly aphids beneath the cottony protection.

"This cottony substance is a very effective protection against rain and against most aqueous spray solutions, or spray solutions made in water only.

"There are two or three ways of combating such pests while yet on the branches. One is to rub the clusters where they occur and crush them. If the operator is careful to do this thoroughly he may kill most of them. With this he can combine cutting off the worst infested branches and burning them. They should not be dropped on the ground, because of the danger of the pests reaching the branches or roots. A second method is to paint the attacked spots with brushes dipped in very strong solution of soap or nicotine extract, or a combination of both. The best preparation is made by using one ounce of strong commercial nicotine extract in about four gallons of water, containing at least one pound of

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Woodburn, Ore.

brown soap shaved fine and dissolved in water, or soft soap, or naphtha soap, or fish-oil soap dissolved therein. The third method is to spray with at least ten per cent kerosene emulsion, or one pound of fish-oil soap in five gallons of water, or one pound of ordinary soap in three gallons of water, or, perhaps best of all, with the combined nicotine extract and soap solution mentioned above.

"The spray liquid should also be directed to the base of the trunk of the tree, so it will reach the collar of the tree where the pests are liable to crawl down the trunk to get into the ground. Mound the tree with earth and spray the top of the mound, or pour some lime-sulphur solution or other spray liquid around the trunk or top of the earth.

"Remove the earth over the roots and see if the woolly aphids are at work on them. If so, cover the exposed roots with fine tobacco dust or pour over them one of the spray liquids mentioned above and replace the earth."

The Baldwin crop of New York state has all been harvested. However, the crop of Baldwins is very light this year. Greenings were sold at \$2.75 to \$3.00 per box, A grade; Kings at the same price. Macintosh Reds sold as high as \$4.00 per barrel where the color was good. It is reported that a great many growers who are anticipating better prices in the winter and spring, have taken space in cold storage plants. In the state of New York practically all of the apples are sold F. O. B. alongside the railroad track. Very few shipments are sent out on consignment or sold through auctions.

In the Northwestern apple exhibit at the San Diego Exposition, is a splendid display of apples from the Wenatchee district. A whole carload of apples will be shipped to this exposition on November 6th from Wenatchee.

Omak, Washington, in the Wenatchee district, reports it will ship 200 cars of apples this week.

A NEW OPPORTUNITY IN THE WEST OKANOGAN IRRIGATION DISTRICT

9,400 acres bordering the Okanogan River will be irrigated with the completion of this project. This section combines the soil and climate of the most favored fruit growing districts of the state, with unusual opportunities for dairying and stock growing. A farm unit of 40 acres has been established and a price fixed on the excess acreage of land by the Board of Directors, which enables the homeseeker to purchase high class irrigated land at prices lower than prevailed twelve years ago in irrigated sections of Washington.

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FRED EBERLE, Manager

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GEO. C. OBER, Manager

The Hood River Apple Growers Association reports a steady sale of apples of all varieties and all grades. However, the movement of low grades is the most rapid. There is a steady sale in a good way for extra fancies, especially of the winter varieties like Spitzenbergs. The very long keeping varieties like Newtowns have not yet been moved very extensively. Shipments are running about ten carloads a day since the beginning of the season, which started about the first of October. At this rate, the association will probably be sold out by the first of the year.

The Oregon Agricultural College has a very educational exhibit at the Manufacturers' and Land Products Show, showing the value and effectiveness of proper spraying for scab. The exhibit shows a display of apples which have been properly sprayed, with 91 per cent free from scab.

Hood River estimates the present apple crop at about 900 carloads, although there are some who think it may reach 1000 carloads. Last year the total shipment was a little over 1400 carloads, including what was shipped to Portland by boat.

The University Horticultural Society of the Ohio State University will hold the fifth annual show of fruit and vegetables during the first two weeks of December. As usual this meeting will be very instructive to the fruit and vegetable growers of that state.

National Apple Day was celebrated extensively in Chicago. Much credit is due to the efforts of Mr. Coyne, one of the most prominent fruit dealers and handlers of apples in that city.

Watsonville, California, reports a good crop of apples in the Pajaro Valley—somewhere in the neighborhood of 4000 cars.

Mosier, Oregon, reports about 30 carloads of apples this year.

Wenatchee reports it is shipping about 100 carloads every day.

Coming Events

Lewisston Livestock Show, Lewiston, Idaho, November 29 to December 4.

Pacific International Livestock Exposition, North Portland, Oregon, December 6 to 11.

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It gives you a high grade quick selling product at a minimum cost. It makes a clean and natural tasting product. Dehydrated fruits and vegetables have been approved by the U. S. Government, while desiccated, dried and evaporated products have been rejected. There is but one Dehydrator manufactured in the West and it is the best By-Product machine ever devised. It is adapted to the individual grower, as it can be constructed to meet any and all requirements. It is fully covered by U. S. patents. Therefore, you are protected in its use.

The manufacturers of this Dehydrator have recently patented new and improved automatic labor-saving preparatory machinery which will further reduce the present low cost for the production of this product.

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You take a lot of stock in what we say on P. A.—just like you believe in ten-dollar-bills! For *we know* what we tell you about Prince Albert is right; *we know* how this tobacco will sit on your smokeappetite!

Just the right thing for you to do quick as you read this is to make tracks for that old pipe or land on the makin' papers, some P. A. and start action, for there's more joy due you instantly than you can shake a stick at!

Prince Albert is sold everywhere in toppy red bags, 5c; tidy red tins, 10c; handsome pound and half-pound tin humidors—and—that fine, dandy crystal-glass humidor with sponge-moistener top that keeps the tobacco in such perfect condition.



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THE WORLD

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FIRST—We can dispose of larger quantities of their fruit than any other house in the country.

SECOND—We have been their best patron for many years and have always met our obligations punctually.

THIRD—We have more actual consumers of fruit, who keep on coming to us year after year because we take the best care to satisfy their wants and requirements.

FOURTH—Taking our entire holdings we handle more high-class stock than any house in the country.

FIFTH—We personally select our fruit in the growing centers, not so much with the sureness of profit as for the certainties of excellence and the belief that we know what our trade deserves.

SIXTH—The growers from whom we purchase get ideas from us as to what the very finest trade want and they know that we have helped raise the standard of excellence of the fruit industry.

But as to being proud—we are most proud, not only of our customers, but also of the growers, without whose help our efforts would be practically in vain.

We believe we have succeeded in assembling under our direction the very best packs of box apples from the premier districts of the Northwest.

We desire to herewith mention the names of a few concerns whose output we handle on this market:

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WENATCHEE GROWERS' EXCHANGE
HOOD RIVER FRUIT GROWERS' EXCHANGE
SEBASTAPOL APPLE GROWERS' UNION
MOSIER FRUIT GROWERS' ASSOCIATION
WENATCHEE VALLEY FRUIT GROWERS' ASSOCIATION
YAKIMA FRUIT GROWERS' EXCHANGE
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NEW YORK

OUR MARKET

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